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THE BUREAU OF AGRICULTURAL ECONOMICS UNDER FIRE: A STUDY IN VALU- ATION CONFLICTS*

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THERE is no end to the manifestations of the drama of politics; but two useful analytical concepts are valuation-struggles and power-struggles. Power struggles are involved in the effort by the Navy to remain outside a department of national defense. Both struggles over power and, more importantly, struggles over valuations are present in the controversy over control of nuclear research: Should it be civilian or military? Within agriculture there are power struggles; the fight in the North Central region between the Agricultural Adjustment Administration and the Farm Bureau in 1943, and the present issue between the Soil Conservation Service and the Farm Bureau are examples of struggles which are chiefly for power. But the attack on the Bureau of Agricultural Economics heavily involves valuations.

"Valuations" is used in Gunnar Myrdal's sense—see *An American Dilemma*.¹ Myrdal has followed the Negro problem to its roots in "a struggle for the soul of America." He discusses conflicts over social policy with reference to relationships of such policy toward *beliefs* and *valuations*. Beliefs are ideas about the nature of reality: *what things are*. Valuations are ideas about obligations, morale and otherwise: *what things ought to be*. "Beliefs concerning the facts are

* While assuming full responsibility of authorship, the writer wishes to thank those who generously commented on this article in manuscript, although revision in the light of comments proved impossible. Especial appreciation is due Professors T. W. Schultz, Economics, and L. D. White and Avery Leiserson, Political Science, of the University of Chicago. The writer also wishes to begin the acknowledgment of a great and general debt to Professor John D. Black, of Harvard University.

¹ Harper, 1944, 2 Vols. See Vol. 1, Introduction and Chapter 1, Vol. 2, Appendix I.

the very building stones for the logical hierarchies of valuations into which a person tries to shape his opinions."² But valuations equally influence what is believed.

In the kind of free-wheeling society, a measure of which we have enjoyed in the United States in the fairly recent past, valuation struggles, while important, have been glossed over somewhat by recurring prosperity. But prosperity now seems no longer automatic. It is engineered. The regulatory state, the promotional state, is at hand. When the state, to paraphrase Lasswell, tells the farmers who can grow "what, when, and how," conditions change. It is no longer equally possible to submerge valuations and beliefs, which, instead, must be hauled out of intellectual attics and examined.

To make this perfectly clear, some of the valuation and belief conflicts that will appear in the following pages are as follows. *First*, differences over economics and economic policy. There is a tendency for farm-bloc Congressmen³ and agricultural pressure group leaders to think in classical economic terms.⁴ Their *belief* here is in the free market; the market really is honest, they think, in distributing economic rewards among men according to their contributions—so long as there is no interference with its (the market's) operations. This *belief* is related to *valuations*: first, that a man ought to get what he is worth, and, second, that he ought to get this reward from his own efforts: therefore there should be no government subsidy. As farm leaders put it, "The farmer should get a fair price in the market place." This statement is offered by farm leaders as descriptive of the result of the present agricultural adjustment (and related) programs which rig the market in favor of the farmer but leave enough of the old forms to support the fiction: "a fair price in the market." Now, how does the conflict come in? Economists in the Bureau of Agricultural Economics (henceforth: BAE) are not so inclined to *believe* in classical economies; in this they are no different from many, if not most, professional economists. This does not mean that these economists are all "Keynesians" or members of any other school; rather, it means that their *belief* is not an automatic free market. If the market is

² *Ibid.*, Vol. 2, p. 1030.

³ The writer will feel free to generalize for purposes of exposition without attempting to do justice to nuances of belief.

⁴ This statement may sound absurd in the face of the evidence of regulatory farm programs; but reflection will convince the reader that it is at least strongly arguable.

imperfect, what *valuation* emerges? What *ought* to be done? *The government ought to work out programs to correct the imperfections of the market*—there is the valuation. The reader may argue that both *belief-valuation* chains lead to the same result: positive agricultural programs. But there is a great difference. BAE can frankly admit the government's policy-making role; it can freely examine subsidies, for example, as possible alternatives to price-guarantees. But for the farm Congressmen and Farm Bureau leaders even to consider subsidies means that they must deny their *belief* that there is a fundamental economic order in the universe which results—or would result—in a fair distribution of goods and services and their *valuation* that a man *ought* to get these goods and services by his own efforts.

Another example is offered of *belief-valuation* conflicts, in which the reader will note a relationship to that conflict pointed up above (for, as Myrdal shows, beliefs and valuations tend to form systems). Here many of the farmer's Congressmen and group leaders have a *belief* that heredity is more important than environment in determining what individuals become. "Blood will tell; you can't make a silk purse out of a sow's ear." Men in BAE are more likely to *believe* that environment is more important than heredity; they accept the Irishman's exclamation when told that one man is as good as another; "Yiss, and dom sight better, too!" These *beliefs* are related to *valuations* concerning *equality*. Both groups would assert that men *ought to be* accorded equal treatment. But for Congressmen and group leaders, this ideal is realized through equal treatment before the law; a man either has the stuff of success in him or he has not. If he has, he will make his own opportunities, given a fair field and no favors. If he has not, nothing much can be done for him. Acceptance of this *belief-valuation* chain enables men to accept and support the present farm programs regardless of their unequal effects. For such inequality merely recognizes the natural inequality among men; if one farmer has a larger historical base than another, he ought to have a larger allotment under the program. Contrarily the BAE. Its members, emphasizing environment over heredity, argue that men ought to be given *equality of opportunity*. They believe that many men, given health and medical care, food and education, now beyond their means, given also an easier access to resources than at present, can rise in productivity, in social worth, and in their self-appraisal.

Other conflicts could be added. For example, take the belief that the farmer is more moral and more righteous than the urbanite—that he is the “salt of the earth,” as Earl C. Smith, ex-president of the Illinois Agricultural Association, puts it. This *belief* supports the *valuation* that the farmer ought to have special treatment economically and otherwise. For example, the “greater nobility” of farmers is held to justify their heavy over-representation in state legislatures. This *belief-valuation* chain arouses levity among those urbanites to whom farmers constitute the bucolic plague. But reaction in the BAE is different. Some of its members are probably agricultural fundamentalists, too. Others in BAE project a less circumscribed but similarly optimistic faith in human nature beyond the farmers alone to include humanity. City-dwellers, they think, are created as much in the image of God as farmers—or as farmers’ representatives who, after the manner of Thomas Wolfe’s successful “Joiners” have generally “gone to town!”

It is hoped that the foregoing discussion will clarify the approach of this paper.⁵ And it is hoped that the paper will afford some insight into the nature of the struggle now going on within agriculture. *We must assert the gravity of the issues upon which Congressmen and administrators differ.* Howard R. Tolley is wrong when he says that it is merely a question of “understanding each other.”⁶ He is wrong because some of the misunderstandings arise from conflicts in *belief-valuations—conflicts that can only be resolved if these beliefs and valuations are brought to the surface.*

This is the prologue; the stage will now be set and the actors introduced.

The Bureau of Agricultural Economics

The reorganization of the Department of Agriculture of 1938 made BAE the “arm of the Secretary” for program formulation: it was, as a staff agency, to give preference to policy-making rather than to research. Here begins the real story of the conflict over power and, especially, over valuations with which this paper is concerned. Powerful “action” agencies within the Department have sought to limit BAE’s policy-making role that their own possibilities in this field might remain undiminished. The American Farm Bureau Federation has attacked the BAE as part of its general effort to bring all agricultural policy formulation and administra-

⁵ The reader is urged to turn to Myrdal for a full treatment.

⁶ House Hearings, fiscal 1947, p. 293, Jan. 17, 1946.

tion under its own domination or that of what it considers its handmaiden: the Extension Services of the Land-Grant Colleges and Universities. A handful of strategically placed Congressmen⁷ have pursued a policy of attrition, culminating in 1946 in appropriation cuts which threaten to reduce BAE to an insignificant role. In addition, BAE has been cut down both by the Secretary's reorganization and the Secretary's practice.⁸ Actually, remarks of Secretary Anderson strongly suggest that the staff-work and advisory function in policy formation have been transferred, not to his office, but to the research divisions of the national farm organizations, chiefly the American Farm Bureau Federation.⁹

Briefly, the BAE was organized in 1922, and economic and statistical work was gathered under its aegis. The original three divisions had grown to eleven in 1945. Creation of the BAE was only one of the manifestations of the rise of farm problems in terms of national political economics in the 1920's. Controversy over the agency's activities is not new. The Outlook Service, designed as a major part of the program of "assisted laissez faire" to give farmers information for their individual adaptations to the market, was begun in 1923. In 1927 the Outlook accurately predicted a fall in cotton prices; by Congressional direction such predictions as to cotton were—and are still—proscribed. In 1931 the Outlook contradicted President Hoover's opinion that the debt moratoria would be beneficial in its effect upon the wheat market; by Presi-

⁷ The term "Congress" will be used sparingly in these pages; it would be misleading to do otherwise. A few strategically placed Congressmen are arbiters of BAE's fate. Since 1938 the appropriation item has been subject to very little debate on the floor of the House; to none in the Senate. There have been three House votes, none of record, with the largest participation in any single vote at 131 (1942). It would be a fair question to ask how many of these members could write a page of critical evaluation regarding BAE's work. The few Congressmen whose names recur in these pages operate on the subcommittee level, upon the floor at times, and in conference. Four years, fiscal 1942 through 1945, saw four conference committees on agricultural appropriation bills. There were 51 places on these committees, of which 39 were held by 11 men: Cannon, Tarver, Lamberston, Dirksen, and Plumley for the House; Russell, Hayden, Bankhead, Nye, McNary, and Tydings for the Senate.

⁸ Secretary's Memorandum No. 1139, Dec. 12, 1945, includes the provision, effective Jan. 1, 1946:

"5. The responsibility for leadership in general agricultural program planning, including direction of the interbureau committees and working groups both in Washington and in the field, is hereby transferred to the office of the Secretary. . . ." See House Hearings, fiscal 1947, p. 182, Jan. 15, 1946. (Since many citations will be made to the hearings of agricultural subcommittees of Congressional Committees on Appropriations for various fiscal years, this method of citation will be used consistently.)

⁹ House Hearings, fiscal 1947, pp. 20-21; Jan. 18, 1946.

dential order BAE was prevented from further use of the future tenses in such announcements.¹⁰

Because of such restrictions, conservative leadership, and the tendency for "action" agencies to do their own economic research and planning, BAE's role was somewhat circumscribed in these years. The Federal Farm Board assembled its own strategic and economic staff. The early Agricultural Adjustment Administration had within it, as a mark of the concern of Henry A. Wallace and his associates over possible misdirections of agricultural policy, a Land Policy Section. But the further creation of other action agencies, dealing separately and directly with individual farmers, and the great droughts of the middle 'thirties brought home the need for coordinated governmental approaches to agriculture's problems.

The Office of Land Use Coordination was created in 1937. The following year at the Mount Weather (Virginia) Conference, representatives of the Land Grant Colleges and Universities and of the Department of Agriculture agreed to a method of cooperative policy considerations designed (a) to provide overall program formulation with respect to operations of the federal Department and state agencies affecting land-use, (b) to establish a means for Departmental collaboration with the Land Grant Colleges, and (c) to bring to life the cherished "two-way" democratic concept of M. L. Wilson and others by enlisting the active cooperation of farmers. The BAE was made the federal partner in this effort. Howard R. Tolley, who had become administrator of the agricultural adjustment program with Chester C. Davis's retirement early in 1936, became Chief of BAE.

The Program of Attrition

The process of cutting down the BAE has been going on for some time. The cooperative federal-state land-use planning program was the first to suffer. The conflict resulting in its demise was essentially over power. Of late issues over *valuations* and *beliefs* have sharply emerged. Some statistical showing can be offered that this last statement is true. Work in BAE is divided into (a) "economic investiga-

¹⁰ For the BAE consult John M. Gaus and Leon O. Wolcott, *Public Administration and the United States Department of Agriculture*, (1940) index; Arthur W. MacMahon and John D. Millett, *Federal Administrators*, (1939). See especially pp. 365-372 and p. 72 for the career of Howard R. Tolley. See also John D. Black, *Agricultural Reform in the United States* (1929), Persia Campbell, *American Agricultural Policy*, (1933).

tions," and (b) "crop and livestock estimates." The latter is supposed to be "objective"—men can count the number of sheep in a field and get the same result, be they Democrats, Republicans, Socialists, Marxists, or whatever. Moreover, this sort of "research" yields tangible results that appeal to "practical men" as eminently worthwhile.¹¹ But "economic investigations" especially when used as the basis for formulation of controversial policy are quite another matter. As the table shows, "economic investigations" have borne the brunt of the attrition, whether power-based or for reasons of conflicting *belief-valuations*, against BAE.

TABLE 1. APPROPRIATIONS FOR ECONOMIC INVESTIGATIONS AND CROP AND LIVESTOCK ESTIMATES, BAE, 1941-1947

	Economic investigations	Crop and livestock estimates
1941	\$3,908,602	\$1,122,200
1942	3,322,490	1,374,043
1943	2,392,519	1,220,626
1944	2,475,636	1,571,720
1945	2,375,236	1,735,000
1946	2,420,000	1,737,000
1947	1,994,607 (House Bill)	2,037,000

Source: Senate Hearings, fiscal, 1945, p. 126 (April 19, 1944), table showing BAE appropriations, 1941 through 1944. Senate Hearings, fiscal, 1946, p. 34 (April 5, 1945). House Hearings, fiscal, 1947, p. 92 (January 18, 1946); 92 Cong. Rec. 2116, March 8, 1946 (Daily Ed.).

At one time Congress was more sanguine regarding the economic investigations of BAE. The Agricultural Appropriation Act for fiscal 1940 (passed in 1939) gave the bureau extremely broad authority. The following wording has enabled H.R. Tolley to assert that Congress accepted Henry A. Wallace's action in making BAE the arm of the Secretary:

"Economic investigations: For acquiring and diffusing useful information among the people of the United States, and for aiding in formulating programs for authorized activities of the Department of Agriculture, relative to agricultural production, distribution, land utilization, and conservation in their broadest aspects, including farm management and practice, utilization of farm and food products, purchasing of farm supplies, farm population and rural life, farm labor, farm finance, insurance and taxation, adjustments in production to probable demand for the different

¹¹ Congressman Taber (N. Y.): ". . . that is the only activity they have which is of value to the farmer." 92 Cong. Rec. 2117, March 8, 1946 (Daily Ed.).

farm and food products; land ownership and values, costs, prices, and income in their relation to agriculture, including causes for their variations and trends, \$839,100: *Provided*, that the Secretary may transfer to this appropriation from the funds available for authorized activities of the Department of Agriculture such sums as may be necessary for aiding in formulating programs for such authorized activities, . . . ”¹²

In 1939, Congressman Taber (R., N.Y.) vigorously objected to the wording on grounds that it constituted legislation in an appropriation bill. The categorical denial made then by Congressman Clarence Cannon (D., Mo.) is of some significance when one considers the tenor of Congressional charges in 1946 that BAE has outstripped its authority:

“This entire paragraph provides for investigation and research and is fully authorized under the organic law, which provides that the Secretary of Agriculture shall acquire and diffuse among the people of the United States information on subjects connected with agriculture, ‘in the most general and comprehensive sense of that word.’”¹³

BAE escaped controversy in 1940; but in December of that year the American Farm Bureau Federation framed a general attack upon the manner of policy formation and execution in agriculture. The Farm Bureau proposed that there be created in the Department of Agriculture a five-man

“nonpartisan board . . . representative of the Nation’s agriculture . . . independent . . . with respect to other bureaus and agencies. . . . It should cover the administration of the Agricultural Adjustment Administration and Crop Insurance, the Soil Conservation and Domestic Allotment Act, Surplus Marketing and Disposal, including the Stamp Plan, Commodity Credit Corporation, the Soil Conservation Service, and the planning activities now in the Bureau of Agricultural Economics.”

On the state level, such programs so far as practicable and including

¹² Italics supplied. The transfer from other agencies was in recognition of BAE’s role in program formulation. The procedure has been for Congress to authorize such budgetary transfers. BAE desired that appropriations be made to it direct rather than by transfer, a step recommended in 1941 by the Office of Budget and Finance, U. S. Department of Agriculture, and by the Bureau of the Budget, Office of the President. Reason advanced for the shift: to expedite Departmental and BAE book-keeping. Another reason may well have been that BAE desired more security against powerful action agencies (such as the Agricultural Adjustment Administration, the Soil Conservation Service, the Farm Security Administration, the Forest Service). In other words, what happened here is another manifestation of the power struggle within the Department. Congressmen did not probe to this possible underlying reason. They doubted that the proposed increases for BAE would be matched by equal reductions in appropriations for planning agencies. As Cannon (D., Mo.) said to Mr. Tolley: “We prefer to have you keep the books.” House Hearings, Fiscal 1942, pp. 277–282, January 9, 1941.

¹³ 84 Cong. Rec. 3307. The chair ruled against Taber’s point of order.

the "State-wide planning program of the Bureau of Agricultural Economics," were to be administered by state committees composed of men appointed by the five-man Washington board from nominees submitted annually by state Extension Directors who previously had consulted with "State-wide membership farm organizations. . . ."¹⁴

The entire Farm Bureau proposal was not accepted, but Congressmen did cut the BAE by \$500,000.¹⁵ In reporting the bill to the House, Mr. Cannon said that the Department should have discretion as to where the cut should be applied; but it was later stated by Senator Bankhead that the argument against the land-use planning activities had "influenced to a large extent the reduction."¹⁶

The Farm Bureau feared then and still fears the development of farmer committees by any agencies in the Department of Agriculture. Remembering that sponsorship by Extension gave tremendous impetus to the early Farm Bureau movement, leaders of the Farm Bureau do not want to see history repeat itself and a new farm organization emerge from the land-use planning committees, soil conservation district supervisors, or any other source. The kind of issue involved is essentially over power; the struggle is less over the ends involved, and inherent valuations, and more concerning the means: "Who is going to operate?"

Also for reasons involving power, the Farm Bureau was probably aided in its attack upon BAE by the Soil Conservation Service and (although there is less evidence for this) by the Agricultural Adjustment Administration. Although both agencies were playing Machiavelli's game, neither could have read Chapter 3 of *The Prince*, where the warning is given to avoid unison with strong states to crush weaker ones. "He who is the cause of another's greatness is himself undone. . . ." Even at the time, S.C.S. and Farm Bureau were bitter antagonists, as they are today; and in 1943 the struggle between the Farm Bureau and the A.A.A. raged throughout the north central states.

¹⁴ House Hearings, fiscal, 1942, Part II, p. 417; February 11, 1941.

¹⁵ The cut was made in the appropriation bill for fiscal 1942. The Department of Agriculture recommended \$5,714,000 for BAE's economic investigations. The Bureau of the Budget cut this by \$2,500,000. The House, on recommendation of the Committee on Appropriations, cut the figure to \$2,620,000. The Senate restored this last decrease, but the conference committee returned to the House figure. 87 Cong. Rec. 2881 and 5400; April 2 and June 20, 1941.

¹⁶ 87 Cong. Rec. 1671, March 3, 1941; and Senate Hearings, fiscal 1943, p. 120; April 21, 1942.

The Soil Conservation Service may have felt that it would have a stake in the future of agricultural planning if soil conservation districts rather than counties could become the local vehicle. In 1941, Congressmen Terry (Ark.) and Collins (Miss.), both members of the sub-committee for agricultural appropriations, were critical of the planning program as encroaching upon, or duplicating, or taking credit for, the work of the Soil Conservation Service. Terry asked H. R. Tolley: "Now you are claiming credit for the work that is being done by the Soil Conservation Service?"¹⁷ Both these men were among the House Managers on the conference committee, who prevailed upon Senate Managers to accept the House cut.¹⁸

The BAE had criticized the Agricultural Adjustment Administration's program in a manner perhaps not favorably received.¹⁹ But again the issue, as the writer became aware of it, was essentially over power. Henry A. Wallace was followed by Claude Wickard as Secretary, and Mr. Wickard had come up through the Triple-A. Nor was this the only bit of evidence that the A.A.A., with perhaps two-thirds of the Agricultural Department's appropriations, was, in effect, rapidly becoming the Department. In 1941, with war increasingly imminent, more coordination became necessary in agricultural programs. Conversations were held as to proper mechanisms, and it was remembered that in World War I, there had been state and county War Food Boards in which (especially on the county level) representatives of Extension had played important roles and solidly built the reputation of what was then a new agency.

But in July, 1941, the Defense Boards (later, War Boards) were created by Secretary Wickard *around the machinery of the A.A.A. even down to the county level*. The announcement shocked the Land Grant Colleges. The Extension Committee on Organization and Policy was reported marshalling its forces. One Extension Director told the writer: "We've got our back up now; we are going to fight."

But fight against whom? With what allies? There is a strain of Hamlet in Extension, and the A.A.A. knew how to exploit it. At

¹⁷ House Hearings, fiscal 1942, January 9, 1941, pp. 280, 286-87.

¹⁸ Other House Managers were Cannon (Mo.), Tarver, Leavy, Lambertson, Dirksen, and Plumley. 87 *Cong. Rec.* 5400. In 1942 Dirksen was the chief individual factor in wiping out the remainder of the planning program. Lambertson is traditionally for economy (cf. his remarks in Congress, June 8, 1940, 85 *Cong. Rec.* 5762). Leavy and Tarver were apparently favorable to the BAE planning program at this time.

¹⁹ *Report of the Chief of the BAE*, 1940, pp. 65-68.

the critical moment, a story was circulated through A.A.A. channels that Howard Tolley was using the Land-use Planning Committees to create a new farm organization to replace the Farm Bureau—with which, remember, Extension is allied formally or otherwise in many states. This was the same Tolley who was held responsible in Land Grant College minds for the “divorce” of A.A.A. from Extension in 1936. So Extension Directors hesitated to back the only alternative they had against Secretary Wickard’s War Boards—the Land-use Planning Committees; and the opportunity was lost.

It should be said, however, that the Extension Directors responded earlier in an effort to save the \$500,000 cut in BAE appropriations. The most impressive demonstration in favor of the planning program was that of Extension Director L. R. Simons, Cornell, who was also Chairman of the Extension Committee on Organization and Policy.²⁰ Simons’s appearance before the Senate group was unavailing, however, as noted.

In 1942 the planning program²¹ was done away. Congress added

²⁰ Senate Hearings, fiscal 1942, March 20, 21, 1941, pp. 370 ff. Director Creel was well-informed and extremely favorable in his remarks. He described the Mount Weather conference of 1938 and a follow-up meeting at Roanoke, Virginia, September, 1940. At Roanoke there was general agreement among representatives of state Extension Services that the work was progressing satisfactorily; the only criticism he could recall was that the program was perhaps being pushed too rapidly. He informed Senators of a special committee of the Extension Committee on Organization and Policy which had reported favorably on the planning program, the report of which had been received by the appropriate committees of the Association. Furthermore, Simons had wired state Extension Directors, asking that they communicate their attitudes to Congress. He received wires from 37 Directors favoring restoration of the \$500,000 cut. Only four Directors opposed the program, and these included three from states which had signed no memoranda of understanding with BAE (apparently Pennsylvania, Illinois, and California). A few Directors, such as D. W. Watkins, South Carolina, approved the program but urged its transfer to the Extension Service. The telegrams to Simons (printed, *ibid.*, pp. 379–91) are for the most part highly commendatory, although a few, such as that of R. K. Bliss (Iowa) were rather negative. Simons also presented favorable letters from the New York State Conference Board of Farm Organizations, made up of eight farm organizations, including the New York Farm Bureau, the State Grange, the Grange-League-Federation, and the Dairymen’s League; the New York State Grange had resolved separately in favor of the program. A number of North Dakota officials also attempted to help BAE, including Governor Moses. President Talbott, North Dakota Farmers Union, also favored BAE. *Ibid.*, pp. 217 ff.

²¹ In January, 1942, there were 1891 counties in the program and more than 8000 communities. Nearly 125,000 farm men and women served on county and community committees and another half-million attended open community meetings. Some 18,000 federal, state, and local governmental employees participated. BAE maintained representatives in land-use planning in 47 states. Pennsylvania was never in the program. For further detail see H. R. Tolley, *The Farmer Citizen at War*, New York, 1943; Annual Reports of the Chief, BAE, 1940 through 1943; House Hearings, fiscal 1942, pp. 258–277, January 9, 1941. For a critical appraisal: Neal C.

to the item for "economic investigations" as shown above the proviso:

"That no part of the funds herein appropriated or made available to the Bureau of Agricultural Economics shall be used for State and county land-use planning."

This restrictive language marked the success of a continued attack by the American Farm Bureau Federation. President O'Neal's prepared statement on the appropriation bill commended Congress for "effecting a substantial saving in the administration of the land-use planning program" for fiscal 1942. He proposed complete elimination of the program, saying "we have not had a single protest from any farmer with respect to the elimination of this appropriation. . . ." He praised research functions of the BAE, for which "here in the city of Washington" adequate funds should be provided.²²

Nevertheless, the House Appropriations Committee did not recommend the death of the planning program. In reporting the bill for fiscal 1943, Congressman Tarver (D., Ga.) said:

"The committee is very favorably impressed with the prospect for beneficial results from the activities of this organization."²³

Congressman Dirksen, from the heart of rural Illinois, the strongest Farm Bureau State, led the fight against the planning program. On March 3, 1942, he was eloquent in his praise of Tolley:

"The Bureau of Agricultural Economics is a planning organization. They have one of the headiest, one of the finest, and one of the most able men in the United States in charge of its activities. That is Howard Tolley. He could make far more money in private business than he does working for the Government, but notwithstanding all that, I am inclined to believe that we are almost planning some of our farmers out of existence."

He then proceeded to detail the "seven broad phases" of BAE work, on each of which he gave a curious interpretation.²⁴

Gross, "A Post-Mortem on County Planning," This JOURNAL, August, 1943.

²² House Hearings, fiscal 1943, February 6, 1942, p. 620; cf. Senate Hearings, fiscal 1943, April 28, 1942, p. 730.

²³ 88 Cong. Rec. 1890, March 3, 1942.

²⁴ Ibid., p. 1895 and cf. pp. 1992-93. For example, Dirksen discussed *war production goals*. His comment was to give the farmer a fair price and he will produce. A return argument might fairly cite the importance of the pattern of farm prices in determining what farmers would produce as well as the degree to which farm prices had, by Congressional direction, become governmentally administered by this time. Again, other than prices, production goals involved consideration of fertilizer, machinery, and labor shortages as well as problems involved in shifting crop rotations,

Dirksen proposed an amendment in the Committee of the Whole to cut the BAE by \$1,000,000, saying, in effect, that he was carrying out the wishes of the American Farm Bureau Federation.²⁵ He charged that the BAE had "set up area offices in the country, they have set up regional offices, and they have made an attempt to set up county offices. . . ."²⁶

Congressman Tarver, chairman of the subcommittee on agriculture, House Committee on Appropriations, vigorously opposed Dirksen's amendment. No one should vote for this amendment, he warned, unless he had read pages 312-316 of the committee hearings.²⁷ The subcommittee had listened to the Farm Bureau's point of view for two days, he informed the House; the Farm Bureau had offered valuable suggestions which were adopted, but not all their points had carried. "I do not believe the Congress would be justified in writing an appropriation bill based solely on the opinions of representatives of the Farm Bureau Federation."²⁸ Recalling Dirksen's praise of Tolley, Tarver also commended the Chief of the BAE. Dirksen's rejoinder acknowledged that there were elements of valuation as well as power at issue. Rexford Guy Tugwell was an able man, he declared, but Tugwellian policies were anathema. Involved here also was a question of the direction of policy.²⁹

problems of storage, transportation, and the like. *Attaining required production*—Dirksen attacked this by citing the wheat referendum of the Agricultural Adjustment Administration ascertaining whether farmers desired to reduce wheat production; it may be fairly asked what the BAE had to do with the routine performance by AAA of functions directed by the Agricultural Adjustment Act of 1938.

²⁵ 88 Cong. Rec. 1993; at other points, in answer to Members' queries, Dirksen was wont to quote the attitude of the Farm Bureau, pp. 1995 and 1997.

²⁶ To put it in its most kindly light, Mr. Dirksen was at least misinformed on these issues. While BAE had set up regional offices, it had not created "area" offices within the states, as both Farm Security Administration and Soil Conservation Service had done. Nor could it fairly be said that BAE had made an attempt to set up county offices. Extension Directors of the several states generally were chairman of State Land-use Planning Committees; Extension County Agents were frequently chairmen of county committees. Nowhere was a BAE employee assigned to work permanently with a county planning committee.

²⁷ These pages contain the formal written presentation of its work that BAE made to the committee.

²⁸ 88 Cong. Rec. 1997. Before the Senate subcommittee on agricultural appropriations, H. R. Tolley attempted to show how important American Farm Bureau Federation influence had been in the action of the House. He desired to read a statement from the Farm Bureau *Official News Letter* of March 24, 1942. Senator Bankhead interrupted him, saying that he was uninterested in anything that had not occurred on the floor of the House. "Regarding the House cut of \$1,000,000, I don't care anything about what was back of it." Senate Hearings, fiscal 1943, p. 120; April 21, 1942.

²⁹ Tarver thought that Tolley and Tugwell should not be mentioned in the same breath. His opposition to Dirksen was supported by Hare, Barden, and Leavy. Cannon of Missouri stated that he had voted against the amendment but after

The planning program was allowed to die without objection. Energies of the Land Grant Colleges were directed in 1942 to fighting off a threatened reduction in appropriations for Extension work. With the exception of Extension Director H. J. Haselrud, North Dakota, no state college official testified one way or the other regarding the planning program.³⁰ Remember that the BAE had been cut for the fiscal year then current by \$500,000, most of which had been used to contribute to the salaries of 308 employees in the Extension Services of cooperating states. Supposedly, BAE could have reduced elsewhere and saved these cooperative employees.³¹ To do so might have meant to recruit the aid of the Land Grant Colleges in 1942; but to do so would also have meant to relinquish nearly the entire program to the states. For these "cooperative employees," although BAE paid as much as three-fourths of the salaries of some of them, were responsible to State Extension Directors.³²

Attrition Continues: Clear Emergence of Issues over Valuations

The introductory pages of this paper now become particularly germane. The attack on the planning programs, culminating in its destruction, turned largely upon power questions, although attention may be directed again to Dirksen's interesting strictures against the *kind* of policies he suspected Tolley of advocating. Since

further study believed the cut could be made. Dirksen's supporters were May and Jennings. The House accepted Dirksen's amendment, 76 to 55. The Senate restored \$500,000 of the reduction but in Conference the restoration was halved so that BAE wound up with a slice of \$800,000 for economic investigations, \$750,000 of which was derived from Dirksen's amendment. See 88 Cong. Rec. 1993, 1997, 4183, 5057, 5061, 5624.

³⁰ E. J. Haselrud, Director of Extension, N.D., Senate Hearings, fiscal 1943, p. 127, April 21, 1942. See also the favorable testimony of Glenn J. Talbott, President, N.D. Farmers Union, pp. 913 ff. and an editorial from *Wallace's Farmer*, March 21, 1942, entitled "Don't Put a Blindfold on Farmers," *ibid.*, p. 125.

³¹ The cut of \$500,000 for fiscal 1942 was followed by a decrease from \$573,000 to \$150,000 for cooperative employees.

³² On February 17, 1943, in response to a question from Mr. Tarver as to whether the BAE had received complaints from farmers or others about the discontinuance of this program, Mr. Tolley replied: "Mr. Chairman, at the beginning of the fiscal year, when . . . we served notice upon the people with whom we had been working that we would not be able to work on it any more, a great many from the colleges, directors of experiment stations, and farmers on the State and county committees expressed to us their regret that we would not be able to work with them any more. They gave us oral and written statements—there were many of them—as to how valuable the work has been and how valuable a part the Bureau of Agricultural Economics had played in it; and in a considerable number of States and counties they are carrying on the work as best they can." House Hearings, fiscal 1944, p. 168.

1944, the issues have been more and more clearly over valuations. House Members were critical in that year of the BAE and the Department for not acting vigorously enough in the interests of the dairy farmers. Secretary Wickard was stating that farmers' incomes were higher than they ever had been. Yet, said Judge Tarver, look at the plight of the dairy farmers! Auditors had examined the books of dairy farmers in Georgia and had proved that such farmers were showing operating losses.

The Secretary of Agriculture, Tarver said, drew upon Tolley and the BAE for advice upon which to base his statements. When Tolley offered to examine the records to which Tarver referred, the latter said he would be glad to accord Tolley all the time necessary, if the latter would go to the O.P.A., or Marvin Jones, or Fred Vinson, tell them on the basis of Tarver's facts whether the dairy farmers were going broke, and "try to influence them to grant relief of a character that would enable these folks to stay in business."³³

The writer suggests that if the issue here is probed, it will yield elements of the *belief-valuation* description. Tarver appears to believe in the peculiar worthiness of farmers; hence the *valuation* that farmers ought to get more money. He also appears to believe in the genuine worth to society of the lawyer's conception of ethics; Tarver, like many Congressmen, is a lawyer.³⁴ Lawyers believe in advocacy. Everyone is entitled to his day in court and to the benefit of council. The common law is hammered out by judges case by case in adversary proceedings of "right and wrong, between whose endless jar justice resides." This *belief* in the way justice emerges in the legal field is projected to the political field where the farmer, too, is seeking collective "justice." The *valuation* that a *lawyer* ought to be an advocate is in turn projected to the *economist* and others: the economists in the Department of Agriculture, "the farmer's department," ought to present "the farmer's side" of the "case."

So we have Tarver, with his accustomed forthrightness, laying it down that BAE ought to conceive its role as providing an economic rationale on the basis of which further claims of agriculture may be supported.

In his oral report to the House on the committee bill, Tarver referred to a difference of opinion among committee members regard-

³³ House Hearings, fiscal 1945, p. 153 and *passim*; February 8, 1944.

³⁴ See Roland Young, *This is Congress*, (1943), p. 173.

ing BAE. Admitting the vital need of its economic investigations "if properly conducted," Tarver said, emphasizing that he spoke for himself alone, that "while the information it furnishes should, of course, be accurate," the BAE

"is supposed primarily to be working for the benefit of agriculture and of the farmer and . . . too much of its effort has been devoted to an attempt to prove that the condition of the farmer is satisfactory, and that he is being accorded a fair deal in comparison with other classes. . . ."

Tarver thought this wrong. If the farmer was disadvantaged, then BAE should show it. ". . . and I, therefore, feel that it has not been wholeheartedly the servant of agriculture it should have been." If the committee were sure the BAE would mend its ways, he added, it might feel justified in asking for an increase in appropriations for economic investigations.³⁵

In 1945 Mr. Tarver again was critical of BAE's analytical work. Tarver pointed out that although farmers' net income had risen in 1944 over 1943, his share of the national income had fallen from 9.2 to 8.5 percent. He scored BAE for having no better counsel to offer for the farmers' relief than subsidy payments.³⁶ Yet Tarver successfully opposed the efforts of Congressmen H. Carl Andersen and Rich to reduce by an additional \$210,000 the appropriation for economic investigations. The result was a bill which cut economic investigations \$100,000.³⁷

Senators were somewhat unhappy about this reduction, and a few remarks will indicate at least Senator Russell's consciousness of a possible attrition policy against the Bureau.

Senator Russell. "Dr. Tolley has not fared any too well for some reason for several years, and I guess they thought that was a good reason to cut his appropriation this year."

Senator Reed. "I want to say as I said before of the Bureau of Agricultural Economics, there is no agency in the District of Columbia or in the United States for that matter, that responds more courteously or more

³⁵ 90 Cong. Rec. 2941; March 22, 1941. Again the Senate attempted to increase the appropriation item and partially succeeded. The House had provided \$2,925,326 for economic investigations; the Senate made this \$2,475,236. The conference committee provided \$2,375,326. *Ibid.*, p. 4575.

³⁶ House Hearings, fiscal 1946, p. 182, *passim*; February 13, 1945.

³⁷ This cut was probably due as much to Dirksen as to anyone. It was predicated upon the five-year census of agriculture, it being stated that "because . . . information developed by the impending farm census will render unnecessary the collection of many types of statistics which have . . . been collected" by the BAE. 91 Cong. Rec. 2548, 2680-81. Mr. Dirksen was the only member of the subcommittee to raise the issue in the hearings. House Hearings, fiscal 1946, p. 216; February 13, 1945.

efficiently or is more dependable in regard to requests from me than the Bureau of Agricultural Economics."

Senator Bankhead. "They have always been very courteous to me."³⁸

1946

So we arrive at the present year. When Clinton P. Anderson replaced Claude M. Wickard as Secretary of Agriculture, there followed the customary reorganization of the Department, reorganization in which eventually BAE's formal role was to be reduced. Meanwhile, two issues over valuations have arisen. One of them is the recurring disagreement over BAE's proper role. The skepticism of Congressmen as to BAE's usefulness, and even its integrity, in the service of agriculture has grown to a critical point. When this issue is considered, readers will recognize its historical relationship to past attacks against BAE; the policy of attrition has become a major offensive.

The second issue will be discussed first. It involves certain reports prepared by BAE for administrative use, one of which is held by Congressmen to raise the racial issue in the South. The problem here is a profound one, and is directly concerned with relative valuation systems. In fulfilling its broad role as a research agency, BAE has concerned itself, in the spirit of the act of 1862, in acquiring and diffusing "among the people of the United States useful information on subjects connected with agriculture, in the most general and comprehensive sense of that word." But the basic act was written when the easy assumption was made that social problems were amenable to solution through research, study, and education: all men if properly enlightened, would agree on policy. Sweet reasonableness was the universal solvent. Such was the creed of liberalism; but about the turn of the century, there was a recrudescence of doubt as to whether human beings are as rational as pictured—or, at least, are rational in quite the same way.

The writer feels that it is very important to an understanding of contemporary agricultural politics that issues of beliefs and valuations be raised. Governmental agricultural policy is almost completely different today from that of 20 years ago. Today such policy has effects growing in profundity, reaching further into the rural social structure, and tending toward a greater degree of inflexibility and irreversibility. We cannot refuse to consider all the possible

³⁸ Senate Hearings, fiscal 1946, p. 90; April 6, 1945.

effects of this new partnership between the government and farmers. *To assume that there is no Negro problem and that agricultural policy has no effect upon it is not to escape our responsibilities.* It is, rather, to accept one set of valuations rather than another. Right here the issue over relationships between politicians or statesmen and administrators emerges in its most important form. Is it possible for government to maintain research and policy-formulating agencies, subject to the direction, of course, of responsible officials, but capable of objective, sustained, and thorough examinations of rural society, or of labor relations, or of any other sector of the economy? We cannot even address ourselves to the real issue of this kind of administrative politics unless we are prepared to haul our beliefs and valuations into the open. Readers are enthusiastically referred to Myrdal, Volume 2, Appendix 2, Section 2: "Methods of Mitigating Biases in Social Sciences." Now to return to the trials of the BAE.

We cannot ascertain what the effect of the racial issue raised by the BAE report on Coahoma County, Mississippi, had on BAE appropriations. On the floor of the House, Whitten (Miss.) implied that this report was the chief cause of a reduction of nearly \$500,000 in funds for economic investigations in fiscal 1947.³⁹ But apparently the Department of Agriculture and certainly the Bureau of the Budget had already recommended a reduction in funds for BAE that fully covered surveys of this kind. Specific questions on this point were asked and answered in the hearings. Therefore, either the racial issue was used as a beachhead for a general punitive expedition against the BAE through a reduction many, many times the amount spent for the one offending investigation in Mississippi; or some other purpose motivated Congressmen in recommending the large decrease.⁴⁰

What happened was this.⁴¹ In July, 1944, the BAE initiated a series of studies of 71 counties in the United States. The Report of the Chief of the BAE for fiscal 1945 states:

"The regional field staffs have conducted studies on current and anticipated rural migration problems in 71 counties representative of the

³⁹ 92 Cong. Rec. 2117, March 8, 1946 (Daily Ed.).

⁴⁰ House Hearings, fiscal 1947, p. 284; January 17, 1946.

⁴¹ Unless otherwise noted, all material here is drawn from House Hearings, fiscal 1947, pp. 234-242, 282, 286. January, 1946. Thus 18 of 130 pages of Hearings upon BAE appropriations are concerned with this issue; in addition, there are one or two indirect references on the floor of Congress.

major type-of-farming regions of the country. These studies are being summarized into regional and national reports. Studies of the economic and social problems of veterans returning to agriculture and changes in farm-family expenditure patterns are being carried on in this 71-county sample." (p. 12; compare 1944 report, p. 6.)

The approximate total cost of the project was \$17,795, according to a statement submitted by the BAE to the appropriation sub-committee.⁴²

One of the counties was Coahoma County, Mississippi, located in the northern delta of the Mississippi River. Frank D. Alexander prepared a report entitled "Cultural Reconnaissance of Coahoma County, Mississippi," December, 1944. Thirty-five copies of the report were dittoed, of which 16 were distributed: 9 in the Department of Agriculture; 3 to Congressmen Abernethy, Whittington, and Winstead of Mississippi, upon request; and 4 to persons outside the Department for review and criticism.⁴³

These facts are as stated; but the record is scanty, perhaps by intention. As Congressman Whitten of Mississippi said:

"Again, I have not put these matters in the record because I did not want to spread an indictment of fine folks, regardless of the types and character of folks that may have made it, or the motives they may have behind them in this report."

The "fine folks" were the people of Coahoma County, whom Whitten and Tarver thought slandered by the report. In addition to the alleged slander, the charge was raised that the report was published; when Tolley denied this, the dittoed copy was waved in his face. When he sought to explain that the copies were for administrative use, Whitten termed the reports "secret documents" and suggested "ulterior motives" behind the collection of the material. Whitten asked:

"Do you think that would be doing the American farmer any good if we were by legislation, if necessary, to put your Bureau back to gathering agricultural statistics and take you out of the socialization field and the accumulation of claimed data and the printing of such vicious attacks on the county and its people, as is done by your Bureau in the case before us?"

⁴² The suggestion on the floor of the House was that the cost of the surveys was much more than these figures indicate. 92 Cong. Rec. 2117, March 8, 1946, Daily Ed.; cf. remarks of Abernethy and Whitten.

⁴³ In addition, some excerpted paragraphs were more widely circulated by someone outside the BAE.

When Tolley asserted that BAE was a "public agency," Whitten agreed that it should be, but "I do not see how you can say you are, fairly and frankly." Whereupon Tolley stated:

"I say we should be a public agency, we should conduct ourselves, and what we do and what we find out in such a way and in such a manner that it will be available to the public at all times, and we should at all times welcome the public to know what we are doing. We should be glad to tell them what we are doing, why we are doing it and how we are doing it, and what we have in mind. I think that this line of work is quite valuable in enabling the Bureau . . . to keep abreast of the agricultural situation and the status of the agricultural situation and its people in this country."

Now what was in this document? That we shall probably never know. Whitten and Tarver both were skeptical of its purposes, or rather, the purposes of the 71-county study, as Tolley stated them.⁴⁴ Tolley himself repudiated the paragraphs "on the matter of the race question" which had been excerpted from the report by someone for circulation—"which I think personally were unfortunate, and no reason for them being in there. . . ." Tolley maintained that this part of the report comprised only 3 or 5 percent. Tarver and Whitten thought it comprised 40 to 50 percent. The only excerpts were read into the hearings by Tarver, as follows:

"At present the militant Negro leadership in urban centers of the North is making its opinions felt on the rural Negroes of Coahoma County, for a number of them subscribe to northern newspapers which do not hesitate to emphasize injustices done Negroes."⁴⁵

and:

"The city of Clarksdale has a highly rated white school system and a

⁴⁴ When Whitten asked if the document was to "raise the race question and make it something of a problem," Tolley said. "No: with respect to the matter of population and . . . the matter of returning veterans, with respect to the matter of what use farmers will make of their wartime savings, if any. That is part of our general effort to keep a running picture of the agricultural situation. . . ."

⁴⁵ This paragraph caused Tarver to remark:

"I think that the treatment accorded Negroes in industrial centers of the North is much worse than that which is accorded Negroes in the agricultural sections of the South in which they are dealt with, on the whole, with sympathy and understanding. Therefore, this is very probably entirely without justification, untrue, and shows an incorrect statement of the situation. It stresses the importance of leadership, so-called militant northern Negro leadership, which in my judgment is a most unfortunate thing and which is doing a greater injury to the Negroes of the South than anything else when it comes to the handling of racial problems which exist in the South, problems which in the main are stirred up by these northern agitators, who seem to take every opportunity of stirring up things of this character. . . ." Hearings, p. 241.

junior high school for Negroes. The municipal swimming pool for whites is located on the campus of the white high school. The school system maintains a free kindergarten for white children of preschool age. The superintendent of the white school is strongly opposed to employing Negro teachers who come from the North or who have been educated in northern schools'."

Setting aside Mr. Tolley's repudiation of such paragraphs, both of those reproduced here seem to report observations "subject to empirical verification."⁴⁶ Prospective dwellers in Coahoma County, veterans looking for farms, for example, might or might not want to know such "facts" before making their final decisions. Presumably, there are some Negro veterans.⁴⁷ Finally, the reader may judge in the only way he can, subjectively, as to the inflammatory quality of these paragraphs.

BAE and the Mind of the Secretary

It would be seriously wrong to construe the current attack upon the BAE as simply a manifestation of the racial situation. Nor are the only valuation issues—or even, in all probability, the most important valuation issues—involved in the Coahoma County report.

Earlier illustrations have been offered to show a growing Congressional suspicion that BAE does not properly view its role as the farmer's advocate and that BAE has poorly understood and falsely pictured the farmer's real position. Two issues will set forth the situation as it now stands. The first issue is concerned with the *belief-valuation* conflict over economic facts and economic policy that was set forth in the beginning of the paper. It is illustrated by two examples. The first is the conflict over the policy, which certain Congressmen and pressure group leaders heartily dislike, of letting prices of farm products fall to their natural levels and making up the farmers' income to some determined level by governmental payments. Secretary Anderson made some speeches which appeared to endorse this heresy. But, since Secretary Anderson was recently a Congressman, although never in the charmed circle of that body so far as agriculture is concerned, it is hard for former colleagues to suspect him of apostasy. Moreover, Congressman Tarver pointed

⁴⁶ This is a widely accepted criterion for the ascertainment of "social facts"; see Talcott Parsons, *The Structure of Social Action*, McGraw-Hill, New York, 1937, pp. 41-42, "Note on the Concept 'fact'."

⁴⁷ For a discussion of the "Southern Plantation Economy and the Negro Farmer," see Gunnar Myrdal, *An American Dilemma*, Vol. I, Ch. 2 (New York, 1944).

out that Secretary Anderson cannot really know much about cotton since he does not come from a cotton-producing section; therefore, he can be exonerated for accepting bad advice and the blame can be placed upon his advisers. Another example of the first issue here is found in the action of the Secretary with respect to the announcement by O.P.A. of the intention to fix price ceilings on raw cotton.

The second issue concerns both the same *belief-valuation* chain, and in the writer's judgment, another that was introduced early in these pages. The second belief-valuation chain involves a conflict that is obscured but needs to be hauled out. In another manifestation, the writer has attempted to bring it out as regards the tobacco program.⁴⁸ It concerns the conflicting beliefs about heredity and environment, and it is buried pretty deep. But it can be smelled out in the conflict over BAE's effort to broaden its investigations of farmers' incomes and expenditures.

It should be stated clearly that the elaboration of the *belief-valuation conflicts* also offer data of importance to the student of administration *per se*. Indeed, a most important administrative problem is the relationship of professional, career administrators and civil servants to the political arms of the government; executive or legislative. The experience of BAE in its relationship to the secretary and to Congressmen suggests the great importance of the *belief-valuation* analysis in this context.

The Secretary, the BAE, and Price Policy for Agriculture

Price policy in agriculture has long been controversial. Students outside the Department of Agriculture have offered their criticisms of present policies.⁴⁹ The Farm Economic Association sponsored a contest in 1945 on price policy for agriculture which called forth many critical essays.⁵⁰ These outside critics have been denounced by agricultural politicians;⁵¹ but when the BAE as part of the

⁴⁸ See the writer's forthcoming article, *The Tobacco Program: Exception or Portent?*

⁴⁹ See, e.g., Report of the Committee on Post War Agricultural Policy of the Ass'n of Land Grant Colleges and Universities, October, 1944; John D. Black, *Parity, Parity, Parity*, 1942; and *Food Enough* (1943); T. W. Schultz, *Redirecting Farm Policy*, (1943); and *Agriculture in an Unstable Economy*, (1945).

⁵⁰ See *JOURNAL OF FARM ECONOMICS*, November, 1945.

⁵¹ House Hearings, fiscal 1947, pp. 18-19; January 18, 1946. Compare remarks of Earl C. Smith, annual address to the Illinois Agricultural Association, who regarded the "prize winning essays as a challenge to the Departments of Economics of our Land Grant Colleges to offer proposals that recognize the fundamental importance of a sustained, contented and prosperous agriculture . . ." November 28, 1945, Chicago, pp. 23-24; italics supplied.

"farmers' own Department" presumes to suggest a critical note, the politicians have available more effective weapons than denunciation: they can punish the agency through its annual appropriations.

Secretary Wickard proposed a plan for cotton in December, 1944. This was followed in April, 1945, by a mimeographed analysis of BAE further exploring alternative approaches to the cotton program.⁵² In both these statements, the alternative program given strongest support would involve drastic redirection of present policies. Not long after Secretary Anderson's incumbency, he was making speeches in the South which strongly suggested his acceptance of the more drastic alternatives discussed by his predecessor, particularly for cotton.

Strategically-placed Congressmen have become increasingly concerned about such official criticism of the farm program. In the Hearings upon the Department Appropriation Bill for 1947 repeated efforts were made to pin the formulation of the new proposals for agriculture on BAE, but Mr. Tolley steadfastly refused to admit a larger function than that of gathering facts, making analyses, reaching conclusions, and—if called upon—offering recommendations.⁵³ His interpretation means that whatever recommenda-

⁵² Secretary Wickard's statement, "Post War Problems of Cotton," was presented to the Special Committee of the House Committee on Agriculture on Post-War Farm Programs. The BAE analysis is "A Conversion Program for the Cotton South," mimeo., for administrative use.

⁵³ See Tolley's remark: "The Bureau of Agricultural Economics does not decide upon the volume of production of the various commodities that will be asked for in the years ahead, nor do we decide upon the price policy, or the price support policy of the Department." House Hearings, fiscal 1947, p. 184; January 15, 1946. When Tarver pressed him as to whether a "recommendation" had not been made in favor of the let-prices-fall policy, Tolley replied: "If I may answer precisely, we suggested that consideration be given to that possibility." Whereupon Tarver: ". . . I wish to express my own opinion . . . that in fostering the promulgation of such a policy, in my judgment, your Bureau is doing a disservice for agriculture . . ." p. 187.

Compare pp. 248 ff., colloquy with Dirksen and others probing where the authority lay. References were made to speeches of Secretary Anderson. Authority of the Department under present legislation, particularly Section 303 of the Agricultural Adjustment Act of 1938 (parity payments) and the "intent of Congress" were canvassed. Dirksen remarked that the Treasury Department goes "on the theory that there is no such thing as Congressional intent and that it is for them to fashion what it is their fancy to have been the intent at some anterior date. It is really amazing how they do that." Whereupon, Tolley: "Economists are not supposed to be experts on the intent of Congress." Dirksen was also concerned as to whether any alternative to the policy that he liked to characterize as "letting prices dribble down to a world level." Tolley said: "No . . . the consequences of prices supported by act of government is being given just as serious consideration. One is being weighed against the other . . ." (see especially, p. 259).

The extent of the questioning on this point may be indicated by a colloquy between H. Carl Andersen of Minnesota and Tolley. Andersen inquired why he should vote for a BAE appropriation or have any confidence in its work if all it had to offer

tions BAE makes upon request are, for policy-making, i.e., political purposes, accepted, rejected, or modified on the responsibility of the Secretary and on his responsibility alone. In addition, Tolley insisted that recommendations were presented as alternatives, a practice which, of course, would strengthen the interpretation that the Secretary alone is responsible for choice of policy.

What actually happens may not be subject to such classical interpretation. The relationship problems between "amateur" political heads of departments and their technical staffs have been frequently canvassed in the literature of political science. Only one aspect of such relationship problems, that of alleviating administrative bias, can be touched upon here. Roscoe Pound, Justice Holmes, and others attempted to educate the jurists of an earlier day as to the importance of conflicting *belief-valuation* systems.⁵⁴ For other disciplines a considerable literature has likewise emerged which, first, calls attention to the inevitable presence of "biases," "prejudices," and, second, seeks to develop some methodology for the approximation of objectivity. Hence it may be stated that *properly* qualified social scientists—operating in the presence of the critical professionalism that obtains today—are well-aware of the importance of bias in any analysis. But the real rub comes when one asks whether any particular group of scientists is "properly qualified"—there is no litmus paper test. Are BAE Social Scientists "properly qualified"? One could compile laudatory references on the part of fellow scientists outside BAE but capable of professional judgment. One could list the impressive number of honors and other items of recognition accorded BAE staff-members.

But would Congressmen accept this kind of evidence? Congressmen grant the ability of BAE members; the very attack on BAE is proof enough: intimidation is the severest form of flattery. But Congressmen would probably not accept the "proper qualification" of BAE members in the sense employed above.

was a proposition of putting farmers "on the same level with farm labor throughout the world . . ." Tolley said:

"I do not know whether it would be worthwhile to further answer. You have heard all this . . .

"Speaking of the entire work of the Bureau . . . , it has been pointed out here repeatedly that facts and statistics with reference to agriculture, and a summarizing and analysis of those facts and statistics, make up a great part of the work that we do. It is for people in positions such as yours to judge as to how much, if any, of those they want." *Ibid.*, p. 264; January 16, 1946.

⁵⁴ In *Lochner v. New York*, 198 U. S. 45 (1905), Holmes dissented: "general propositions do not decide concrete cases. The decision will depend on a judgment or intuition more subtle than any articulate major premise."

The upshot is that Tolley might make all manner of denial without avail. The rumor was being spread that certain members of the BAE were "writing the secretary's speeches for him." And Congressmen were certain that the BAE poisoned the mind of Secretary Anderson by selling him the "let-prices-fall" policy. After three days of Tolley's testimony, Tarver said to Secretary Anderson that Tolley favored the "let-prices-fall" policy.

"I do not know that he made any unequivocal admission of that type because the doctor does not make unequivocal admissions of any type."⁵⁵ Tarver understood that speeches of the Secretary indicated his approval of the policy.

Secretary Anderson stated flatly that this was not correct. He is "not attracted in any way to the proposal that we allow prices to drop to the world level, whatever it may be, or whatever the domestic level may be, and then fill out the difference with a payment from the Treasury." He had so informed his staff. As to the parity, which had been "a fine thing for the farmer," the formula needed reexamination. But proposals to change the formula "would have to come from the farmers themselves and from the farm organizations."⁵⁶

⁵⁵ Tolley certainly came close to such an "admission." In doing so he gave credence to either of two beliefs. First, that the "innermost convictions" of supposedly objective social scientists necessarily color their findings and that in turn these findings are foisted upon ingenuous policy-makers. Second, that, given the nature of present and prospective agricultural programs, an important part of an agency charged with "program formulation" is to be able to look squarely at the eventualities any course of policy may entail. Tolley said:

"The point I want to make . . . is that holding the price at which cotton moves into the world market away above the world price is going to do two things. One of them is to dry up the export market, unless we have export subsidies or something like it. The other is to dry up part of the domestic market on account, on the one side, of competition from substitutes, and on the other side just the economic fact that the higher the price the less the market will take. So, to have a market for cotton, what we can produce and what we should produce in this country, and to have a market mechanism so that cotton will clear the market and not get piled up and *make it necessary for us to have strict and rigid production control, cutting down the amount of cotton that is produced in future years*, it seems to me that serious consideration should be given to letting the going market price of cotton be at or near the price that will clear the market, both domestically and foreign; that loan operations and all other operations should be in that way, and that the difference between what a farmer gets for his cotton or other commodities and what has been determined to be the parity return should be made up of payments, if you please, in the way they were made up in 1933, 1934, 1935, 1936, and 1937." House Hearings, fiscal 1947, p. 226; *italics supplied*. Compare pp. 230, 231, 255.

⁵⁶ House Hearings, fiscal 1947, pp. 19-20, 33, and 50-58. January 18-19, 1946.

Much was made of the fact that the let-prices-fall policy had no authoritative political sponsorship. Tarver asked Tolley: "So far as you know . . . no farm organization, no farm leader, no State commissioner of agriculture has suggested this plan of yours with reference to allowing agricultural products to be disposed of at

The Secretary's position was acceptable to Congressmen. H. Carl Andersen stated on the floor of the House:

"Mr. Chairman, in fairness to the Secretary of Agriculture, I want to state that he personally has refuted any intention of foisting any such program upon the American farmer. I fear, however, that he may be overridden by certain men who have more authority in policy making than he has in this administration.

"We must have for agriculture, not a defeatist program as seriously studied by the Bureau of Agricultural Economics, but a constructive forward-looking program, which will hold up farm commodity prices, union labor wages, and give a decent scale of living for all of us here in America."⁵⁷

Thus do Congressmen reach over the heads of "responsible" Secretaries to smite their wicked advisers. Note that the objection is even to giving "serious study" to any program that might be an alternative to that already become sacrosanct.

Bureau of Agricultural Economics, The Secretary, and Office of Price Administration Ceilings on Cotton

The BAE was attacked because Chester Bowles, while Administrator of O.P.A., had announced raw cotton ceilings. The press stated that this was done with Secretary Anderson's approval and Tarver assumed that the Secretary acted upon the advice of the BAE. Tolley and O. V. Wells, Assistant Chief, were queried on this point. Wells interpreted the action in the sense of legal conformance. The Secretary of Agriculture, according to law, is required to state that price ceilings on agricultural commodities, as announced, will return parity to the farmer. Wells described the calculation whereby it was determined that the minimum announced ceiling would do so.⁵⁸ The Secretary of Agriculture would have an opportunity later, according to Wells's statement, to decide on the advisability of promulgation of ceilings. Mr. Tolley emphasized that the BAE had not been consulted on the matter, although granting, of course, that BAE statistics had been used. This is part of Tolley's effort to delineate a public servant's functions; his analyses and conclusions

world prices and making up the difference between that and parity prices from the Federal Treasury." None that he had seen, Tolley replied. House Hearings, fiscal 1947, p. 261; January 16, 1946; cf. Tarver's remarks in the House, 92 Cong. Rec. 2048; March 7, 1946; (Daily Ed.)

⁵⁷ 92 Cong. Rec. 2106, March 8, 1946 (Daily Ed.); cf. Tarver's remarks, *ibid.*, p. 2048, March 7, 1946.

⁵⁸ House Hearings, fiscal 1947, pp. 191-203, 225-234; Jan. 15, 1946.

are available to his superiors. Many of them are available to the public; his *recommendations*, however, are available only to his superiors and then only upon request.

This policy satisfied neither Tarver⁵⁹ nor Whitten.⁶⁰ Tarver thought it might be BAE's duty, even if not specifically requested, to advise the Secretary of Agriculture as to what price ceilings would mean to cotton farmers. Tolley said that, not having been asked, he did not know what statement he would make in this regard. Tarver thought this an "indefinite statement" from one in Tolley's position "upon whom I think the farmers . . . have a right to rely to exert his full influence and ability in their behalf. . . ."

He would propound the question to Tolley; he, Tarver, was trying to ascertain whether appropriations should be granted. Was Tolley really fighting for the farmer or had he the consumers' interests and the high salary levels of his Bureau in mind? Then:

"Just what can you say, or will you say, regarding this problem of the cotton farmer which to him is a matter almost of life or death? Have you any opinion about it? If so, will you express such opinion as you have? Just where do you stand?"

This gave Tolley an opening that he exploited fully:

"That is a different question. I am very glad to talk. You have asked me how I feel toward the farmer and how I feel about the welfare of the farmer."

Mr. Tarver. "We all feel kindly toward the farmer. I was more specific than that."

Mr. Tolley. "I have said this afternoon that I personally feel that the farmer should have an opportunity to have a level of living equal to other classes in the United States. . . . That is the basis of the analysis and the research done in the Bureau. . . . That is . . . my personal philosophy and the way that I try to run my job."

Mr. Tarver. "I am trying to find out—"

Mr. Tolley. "That is my philosophy."

Mr. Tarver. "I am trying to find out—"

Mr. Tolley. "Now, you asked me about cotton in the South."

Mr. Tarver. "No; I did not ask you that particularly. I asked you about this action of the Office of Price Administration. Have you any opinion about it? Is it fair to the cotton farmer? If . . . not, why . . . not? . . . Do you have any opinion? Say so if you have."

⁵⁹ Hearings, pp. 202-203.

⁶⁰ For Whitten, compare p. 225. "Actually you just drift along and do not care to get into conflict with Administrator Bowles . . . with the Labor Department nor with the CIO or the labor organizations, and for that reason you just do what you are called on to do, and let it go at that . . ."

Mr. Tolley. "I think that it is in line with the legislation that the Congress has enacted."

Mr. Tarver. "And you think that it is fair?"

Mr. Tolley. "I did not say that. First of all, I think it is in line with the legislation that Congress has enacted. Now, has Congress enacted legislation that is fair to cotton farmers? I think that Congress has enacted legislation that has helped cotton farmers."

Mr. Tarver. "I do not want your opinion of the legislation enacted by Congress. You have not been asked for that."

Touché! It is not often that the bureaucrat turns on his tormentors; nor is it often that principles of administrative responsibility are set forth with as much wit.

Digging further into the question of cotton prices, one finds the fundamentally different beliefs about what exists and valuations as to what public officials ought to do, both interrelated. Congressmen thought that if industrial labor was to be guaranteed 75 cents an hour, so should cotton farmers. Cotton, therefore, should sell for 75 cents a pound, since, it was argued, it took approximately an hour's labor to produce a pound of lint. Judge Tarver set out the one hour-one pound figure, and Sherman Johnson, Assistant Chief, BAE, gave some appearance of approving Tarver's statement. Later, however, Johnson declared that labor for the country over averaged half an hour per pound of lint cotton. To this Tarver retorted: "I think it is a very generally accepted fact that the statement you made on yesterday (i.e., one hour-one pound) is more accurate."⁶¹

But Sherman Johnson could not agree. His previous estimate had been too high. Tables were printed showing hours of direct labor per pound of cotton and income from cotton on family operated cotton farms in various regions. A glance at these tables will convince readers of the difficulty of the Piedmont, from which Tarver hails, in the light of the comparative advantage of the Southwest. In Piedmont two-mule farms, 1940-44, some .52 of an hour were required per pound of lint; in the Southern plains (e.g., the Texas Panhandle) the figure was .12 of an hour. Consequently 1944 figures for return for an hour's labor show 28 cents on such Piedmont farms but 88 cents in the Southern Plains.⁶²

But Congressmen were dissatisfied with BAE's method of calculation. What labor should be included? Should labor to produce

⁶¹ Hearings, *op. cit.*, pp. 189, 260 ff.

⁶² *Ibid.*, pp. 277-78.

feed for mules to work the cotton be shown as labor directly for cotton production or separately? Tolley and staff desired to consider typical farms as units and to compare different combinations of enterprises on typical farms as to the total costs involved, including labor, and total incomes received. Congressmen Whitten and Tarver apparently wanted to single out cotton specialty farms, show all labor on such farms as incident to cotton production, arrive at a figure of the time consumed in producing a pound of lint under such circumstances—and then take this figure as a general one for cotton's labor requirements: thus indicating what the price per pound should be for cotton. Both Congressmen are lawyers; this approach naturally would enable counsel to make the best possible case for his client. BAE, then, was requested to provide an economic rationale for cotton prices high enough to recompense farmers for labor, the necessary amount of which Congressmen had predetermined. Any failure on BAE's part so to perform brought the prompt charge of "consumer-mindedness," O.P.A.-mindedness, or of having "an innermost attitude of mind" that twisted the evidence against the farmer. No respect was shown for the integrity of Dr. Sherman Johnson, a man with one of the brightest reputations in the profession. It is no wonder that Tolley felt compelled to defend the honesty of his staff!⁶³

Later Secretary Anderson told the subcommittee that he had refused to join in the press release with O.P.A. on cotton ceilings. Absent from the Department when the request came from O.P.A. to agree to the legality of the announcement of the intention to place ceilings on raw cotton, Anderson himself had not signed the approval. ". . . I certainly would not go back on that approval, because we cannot put ourselves in the position of saying we would not ever approve a ceiling on cotton if cotton got completely out of hand." He further assured Congressmen that actual establishment of a ceiling "will require the approval of the Department of Agriculture." Congressman Tarver asserted that even in contemplation cotton ceilings were having unfavorable effects upon the price. He invited the Secretary to issue a statement in the immediate future as to whether he would accord approval to ceilings if finally proposed to become effective. When the Secretary wished to comment, Tarver informed him:

"There was today a meeting of some 100 or more Representatives from

⁶³ *Ibid.*, pp. 288-96.

the South to discuss this question, and they appointed a committee to wait on you, on Mr. Bowles, and on the President to discuss this general subject. . . . So I do not want you at this time, unless you feel inclined so to do, to give any positive expression of your views . . . until you have heard . . . the committee."

The Secretary obeyed this injunction.⁶⁴ On the floor of the House, Tarver stated that the Bureau of Agricultural Economics was largely responsible for the "perfectly senseless and ridiculous proposal" of O.P.A. to place ceilings on raw cotton.⁶⁵

Farm Income and Expenditure Investigation

The second issue which reveals the problem of valuations in its bearings upon the politics of agricultural appropriations has an importance that no amount of discussion here can accord full justice. We have a planned agriculture; and Congressmen want it that way. So, among pressure groups, does the American Farm Bureau Federation.⁶⁶ Critics have noted the regressive income effects of the program as it has developed: the tendency to give "to him that hath" and take away from him that has little, even that little which he has.⁶⁷ True, there has been some palliative modification of the program. But the operative principle remains the historical base.⁶⁸ As to its effect (as well as that of other factors which help determine farm incomes) we have the almost incredible admission by O. V. Wells, as knowledgeable of agricultural programs as any one:

"We know very little about the distribution of . . . income between farm families."⁶⁹

In short, we are plunging ahead with regulatory programs which tend to freeze a pattern of income distribution among farmers without really knowing what the actual distribution is, and what the real effect on individuals is likely to be—and we have been going merrily along in this fashion for nearly 13 years.

Wells also said:

⁶⁴ House Hearings, fiscal 1947, p. 50; Jan. 18, 1946.

⁶⁵ 92 Cong. Rec. 2048; March 7, 1946 (Daily Ed.).

⁶⁶ See the list of fifteen basic laws "To Stabilize Agriculture," *The Nation's Agriculture*, October, 1945.

⁶⁷ See T. W. Schultz, *Redirecting Farm Policy*, (1943), pp. 20, 66.

⁶⁸ For the way this works, see the writer's articles in John D. Black, ed., "Nutrition and Food Supply; the War And After" *The Annals of the American Academy of Political & Social Science*, Jan., 1943, pp. 191 ff., and *The Tobacco Program: Exception or Portent?* *Op. cit.*

⁶⁹ House Hearings, fiscal 1947, pp. 279-82 for all citations in this discussion; Jan. 17, 1946.

" . . . there is at the present time, in the Department of Labor, a rather well conceived program of finding out as much as possible about the income and living conditions of laboring people. I believe the Congress of the United States . . . directed the Bureau of Labor Statistics to calculate a minimum cost budget for the American working family, for the average American workman in cities. Such a minimum cost budget will . . . be used to compare with the income of those laboring people.

"Now we have done a great deal of work in the Bureau of Agricultural Economics on agricultural income . . . (and) on parity prices. However, parity price and over-all income do not in my opinion, adequately measure the living conditions that American farmers either now have or expect."

But, in addition, he had stated:

"We also know very little about the total amount of income received by farmers and farm people from work off the farm, although of course we are well aware that it is rather substantial."

And it was this and similar utterances upon which Tarver seized:

"If I judge correctly . . . , one of the purposes is to show that the farmer has a better income than he has been supposed to have."

And, brushing aside attempts at explanation, he continued:

"The trouble about it in my mind is that I used to be a very strong advocate of the work of your Bureau. I resisted efforts to decrease an appropriation some years ago, and have always thought that sufficient funds ought to be provided for you; but during the last year or two a suspicion has grown up in my mind that you may not be working for the farmer; you may be working more for the consumer of agricultural products; and if I interpret part of your testimony correctly, one of your purposes here is to gather information which will show that the farmer's income is not so deplorably low as has been heretofore represented from the sale of agricultural commodities, but that in addition he has some kind of mythical income from work that he is supposed to do off the farm. I am just not convinced in my own mind that your purpose is to help the farmer."⁷⁰

There is no question of Tarver's strategic support of the BAE, as shown above. He was to come to its rescue again in 1946 when Congressman H. Carl Andersen attempted to slash the funds for economic investigations by another \$300,000 on the floor of the Committee of the Whole.⁷¹ But the appropriation for investigating income and expenditures has not been granted. We shall continue to operate in a manner beneath the aspirations and technical pride

⁷⁰ House Hearings, fiscal 1947, pp. 279-82; Jan. 17, 1946.

⁷¹ 92 Cong. Rec. 2116-2117; March 8, 1946 (Daily Ed.) Andersen's effort lost by eight votes.

of democracy by enforcing regulatory programs without at the same time making the fullest effort possible to ascertain their effect upon differently situated individuals.

Part of our failure here may well be due to the refusal or inability to examine the *belief valuation* issue involved. To restate the issue as it appears to the writer, we have adopted regulatory programs for agriculture which entail the assignment to individual farms of quotas and some control both over entry into farming and also over increases of various enterprises in farming. Quotas are assigned largely on a rule-of-thumb, the "historical base." The entire program is rationalized as an effort to get "economic justice" (parity) for the farmer. But, in general, results are tested by comparing *general* ratios of prices received and paid by farmers, of farmers' and others' incomes. The assumption must be that the general returns to farmers break down acceptably to individual farmers. That there is some difficulty, politically at least, in making this assumption is shown by the various efforts to improve the A.A.A. allotments in the interest of the small farmer.⁷² Why is the assumption made? In the early days of the A.A.A., rules of thumb had to be employed. But to have maintained the assumption for 13 years suggests that it accords with some *belief valuation* chain. The *belief* that helps explain the easy acceptance of the way the program works is that men are naturally unequal in farming ability as in other things and that heredity plays a strong part in passing on special ability from father to son. The *valuation* is, of course, that rewards *ought* to be in accordance with ability. If these *belief valuation* chains are held, one can accept the historical base as resulting in rough justice for individual farmers.⁷³ When such *belief valuations* are challenged, either openly or, as with the BAE, tacitly, a conflict on a very profound level results.⁷⁴

Conclusion

The story of attrition against the BAE has offered insight into the power struggle, especially as regards the formidable American Farm Bureau Federation which turns its fire, now on this agency,

⁷² Such adjustments in allotments in favor of small farmers are frequently palliative in nature. See "The Tobacco Program: Exception or Portent?" *Op. cit.*

⁷³ Other *belief-valuation* chains are involved; e.g., the hardy belief in automatic laws of economics.

⁷⁴ Similar conflicts over valuations frequently occur between the Farm Security Administration and other agencies or farm organizations. FSA's rural rehabilitation program flies in the face of the *belief-valuation* chain analyzed above.

now on that one, through its Congressional spokesmen, such as Dirksen. Recently one Land Grant College official expressed doubts to the writer whether BAE can survive under present leadership since "Ed O'Neal no longer has any use for Tolley."⁷⁵

That O'Neal and the Farm Bureau carry great weight in the downfall of BAE is strongly suggested both by what appears in foregoing pages and by the new restrictive wording of the appropriation item added in 1946 by the House.⁷⁶ Before the subcommittee, O'Neal urged that BAE be confined to statistical and fact-finding research.

"It should be prohibited from conducting social surveys, agricultural planning and promotion, and opinion polls (except bona fide factual marketing studies and surveys of consumer attitudes and preferences with respect to the consumption of agricultural commodities). All funds for this type of work should be eliminated. The regional offices should also be eliminated as this is a needless expense." (Italics supplied.)

The BAE item in the appropriation bill, with the Committee cut of \$485,543 below the Bureau of the Budget recommendations, which the House accepted, contains new restrictions as follows:

"Provided further, That no part of the funds herein appropriated or made available to the Bureau of Agricultural Economics shall be used for State and county land-use planning, [to this point, language is the same as that added in 1942; then]: or for the maintenance of regional offices, or for conducting social surveys." (Italics supplied.)

The chief focus of this paper, however, is the *belief valuation* conflict. If "everything includes itself in power," then appetite may well make "an universal prey." If it is possible to go further, we cannot afford to rest on power analyses alone. The *belief valuation* approach should be helpful in permitting a more profound understanding of the nature of the issues which divide us.

Meanwhile, what is to be done about BAE? Considering the nature of modern agricultural programs, is there no need somewhere for organized consideration of their effects? Congressman Hope of Kansas has charged that the tobacco program provides not

⁷⁵ This was before H. R. Tolley's resignation.

⁷⁶ House Hearings, fiscal 1947, pp. 1644, 1653-55; 92 Cong. Rec. 2116, March 8, 1946 (Daily Ed.). It should be added that in none of the years, 1941-1946, was the BAE the chief target of Farm Bureau criticism. In 1941, the main emphasis was upon acceptance of the sweeping AFBF proposals, as noted, and the shortcomings of FSA and SCS. Both these agencies have figured prominently in AFBF criticism in each succeeding year. An all-out attack was levied at FSA in 1942; in 1943, chief emphasis appears to have been upon reforming the AAA; in 1944, AAA, FSA, SCS, and departmental information offices were chief subjects of criticism.

merely a closed shop, but a closed shop with a closed union.⁷⁷ There is a tendency for separate programs to be developed for all important agricultural commodities: where are they leading the country? Are we not at least going to inquire? If we retain any pretensions whatsoever to rationality, what are we to do about the available agency for such inquiry, the BAE?

To do anything about the plight of the BAE is, as these pages show, extremely difficult. A handful of strategically situated Congressmen have BAE at their mercy. Their control is tightly held; for BAE appropriations stimulate by no means the wide Congressional interest that the issues over parity payments, Commodity Credit Corporation loan rates, the organization of agricultural credit, the food-stamp plan, and other matters arouse. The greater the general Congressional indifference, the more vulnerable is BAE to the strategic few. But where can this Bureau, which Congressman Sheppard of California called "the heart pulse of the operation" of the Department, find support? In the Land Grant Colleges? Remember the record in 1942. Unless the Colleges get cut heavily in on the appropriations, they are not interested. In the Secretary of Agriculture? The record of 1946 returns a negative answer: the BAE is made the scapegoat for secretarial policy determinations. It becomes increasingly difficult to accept the idea of the Secretary as the responsible political chief of the Department.

Since this paper was written, H. R. Tolley has dramatized the issues it attempts to analyze by resigning as Chief of the BAE. O. V. Wells has been appointed to succeed him. The writer hopes that his argument will have convinced readers that this shift in personnel is no solution to the problem. The nature of the problem is such as to involve, among other things, conflicts over beliefs and valuations. In the future as they have in the past, such conflicts will affect the determination of agricultural policy and relationships between politicians, pressure group leaders, administrators, and civil servants. Whoever leads the BAE, unless that organization becomes merely a recording angel, is going to be concerned with the substance of policy. He is going to need continuous and intelligent criticism. If he is to neutralize biases among his staff, attain a degree of objectivity, and still carry the analysis down into the belief valuation conflicts, he must have support—continuous, intelligent, and critical, nevertheless, support.

⁷⁷ See the writer's *The Tobacco Program: Exception or Portent?* *Op. cit.*

PROFESSOR SCHULTZ AND C.E.D. ON AGRICULTURAL POLICY IN 1945

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MOST readers are familiar with the manner in which the C.E.D.'s research studies are made. The author had the benefit of discussions of his subject by three groups: "A Research Committee consisting of successful businessmen," "A Research Advisory Board whose members are recognized as among our leading social scientists," and the "Research Staff, of which Professor Theodore O. Yntema is director." The subject matter of each report is discussed by the members of these three groups meeting together. "Discussed" is an inadequate term. 'Earnestly argued, and for long hours' does more justice to the work." But "no effort is made to arrive at absolute agreement," and ". . . the author is free to present his own conclusions and does not speak" for the group. The Research Committee will issue "a separate policy statement" where desirable. Such a statement was published in *A Statement by the Research Committee of the Committee for Economic Development* under the title of AGRICULTURE IN AN EXPANDING ECONOMY. But one has to read closely indeed to find any significant disparities between the two statements. Unless Professor Schultz has revised his thinking recently, however, he has ideas on agricultural policy that go beyond what is set down in this book. Possibly they were left out because of not fitting in directly with the somewhat limited objectives of C.E.D.—"high production and high employment in a democratic society."

This article is particularly about the book which Professor Schultz wrote working in such a group. It is being written only after the editor of this JOURNAL had exhausted his list of potential reviewers of the book and found them all either contracted to review it for other journals or not in a position to review it because of their connections. Agricultural economists in the public service are disposed to be unusually circumspect these last few months. The writer of this article has been engaged along other lines than general agricultural policy in the past two years and has had no time to do any more research on some points made in this book that need such research. Much of what follows is therefore in the form of questions raised. For the most part, these questions were raised in a rather

prolonged discussion of the book in recent weeks by the group of Harvard graduate students in Economics 171, Economics of Agriculture. This article, like the book, is therefore to some extent a group rather than an individual effort.

The Argument

Since many of those who read this article will not yet have read the book, a brief statement of its propositions is called for at the outset.

1. Agriculture was in unbalance in the period between the wars and promises to be again so within a few years after the war. The remedy for this is heavy migration from farms to cities, and an expansion of industry roughly three times as fast as of agriculture. Farm people are to be helped to migrate by issuing a National Outlook to serve all labor, and giving grants in aid to cover the expenses of migrating.

2. In business depressions, agriculture is especially vulnerable because farm production continues in full swing and prices of farm products decline sharply as a result. The "first line of defense" against this is to prevent, or dampen, the depressions, relying upon fiscal-monetary measures for this, these being defined broadly as "the actions of government entailed in the issue and retirement of money, the spending as well as the raising of money, through taxation and public expenditures and through public borrowings and repayments, including government loans to individuals and corporations." (p. 219). Failing this, farmers are to keep on producing, but to receive "compensatory payments" equal to, say, 85 per cent of the immediate pre-depression price for the different farm products, these to begin when some index of general business conditions, such as employment or production, shows a depression to be under way.

3. Temporary surpluses of particular commodities arising from unusually good weather are to be handled by storage programs. The detailed conduct of such programs is not presented, other than to say that the loan rates must not be based on a 1910-14 parity formula, and ". . . the economics of farm storage is in its infancy."

4. Chronic surpluses of particular farm products—as of wheat following the introduction of tractors, combines and tractor-combines, or of cotton following the westward expansion in the 1920's: This problem is analyzed mainly as the problem of "depressed areas" and in terms of cotton. Above all, prices of the surplus

product must be allowed the free play of the market. While labor is being assisted in moving out of such areas, and the farmers in shifting to other lines of production, farm family incomes are to be maintained.

5. Price policy: First of all, stabilize the general price level by fiscal-monetary procedures. After that, announce support prices "far enough in advance to enable farmers to develop their next production program in harmony with the announced prices," the announced prices to be "those prices which will achieve the desired output." (pp. 263-5).

6. Other measures to lessen income instability: Crop insurance in areas of high climatic risk, and improvements in farm technology.

7. No mention is made of any income payments specifically to cover the general unbalance described under No. 1 with agriculture still relatively over-expanded and depressed. This is important for the period of unbalance that Professor Schultz forecasts after two or three years. He does observe, however, that compensatory payments in any depression that might occur after the present war and postwar boom could not very well be based on these present boom prices.

8. Foreign trade in farm products: Close the gap between external and internal prices. Stabilize prices of farm products so that producers will more clearly discern the low levels of prices of export products. It is recognized that these export products tend to come from areas with few alternatives, and that in such cases the only solution to the problem of chronic surpluses and low prices is migration from and decline of the areas.

9. Consumption adjustment: Subsidizing more consumption is better than subsidizing less production, but must not be diverted into measures to improve prices of particular products.

10. Conservation: Soil conservation work should be classified into that of a continuing type and that which can be postponed until the next depression. None of it should be mixed with acreage control.

The Dichotomies

The reader by this time will have noticed Professor Schultz's tendency to offer only two choices in each case. We must take this one or that one, and there is no other—for example, equilibrium prices or parity prices; a surplus distribution program based only on

dietary needs, or only on surplus disposal needs; a crop adjustment program based only on soil conservation or only on surplus control. No one questions the need for keeping two objectives—if there are only two—clearly separate in one's thinking. But that measures taken shall invariably serve only one purpose at a time seems, in many situations, to be a waste of energy and resources—like making two separate trips to the mill, one to have some corn ground and the other to buy some feed. Perhaps the best timing for the two trips is not the same, but a little adjusting may make one trip serve both ends.

The writer readily admits that the objectives in Professor Schultz's principal dichotomy—that between prices to secure adjustment of output and prices to increase farm income—have frequently clashed in the past and can easily do so in the future. Holding up the price of cotton as a way of getting better incomes for Southern farmers has surely stood in the way of needed production adjustments and also helped us lose some of our foreign cotton market. But the support prices for peanuts, milk and eggs during the war worked together to the common end of desirable production adjustments in the South and increased incomes for Southern farms. Unavoidably a good forward-pricing program for the postwar will combine these two ends in part of the country and the opposite in other parts. We must recognize at the same time that the proposed payments to maintain farm families during periods of production readjustment will retard the adjustments unless very carefully managed. They surely had this effect in the western wheat areas before the War. The practical procedure is to consider any proposal from the standpoint of its effect on both income distribution and allocation of resources and weigh the good effects against the bad. The classical example of an income distribution measure that may affect allocation of resources adversely is a minimum-wage measure. Yet if such wages are imposed intelligently, the ill effect on allocation resources may be so slight as to be relatively unimportant.

The second dichotomy given prominence in this book is that between subsidizing food distribution to reduce food surpluses and subsidizing it to improve diets. Professor Schultz considers this so important that he devoted a paragraph to it in his Preface (p. xii). He writes: "But policy designed to serve the nutritional requirements of a people is of necessity different from measures to bring balance and stability to agriculture. . . . Food policy must stand on

its own merit." Surely it is proper to question whether they need to be as wholly different as these statements imply. If, for example and perchance, the consumption of more whole milk, cheese and milk powder would be a feasible and desirable addition to the diets of the people of this country, as the nutritionists all insist, and at the same time the feeding of more of our wheat and other grains to dairy cows in place of consuming it directly, and also shifting more of our grain land to legumes and grass to provide good dairy rations, would reduce the total calorie output and thus reduce the overall food surplus, would not the measures adopted to this extent be the same? Adding more eggs and pork would also improve many diets and at the same time reduce the surplus of feed crops substantially. Question may be raised, of course, as to whether the fraction of the population that consumes too little of these can afford more of them. But if subsidies are to be used, why not use some of them to subsidize the consumption of low-income families so that they can afford to eat more eggs and pork? If after a few more years, this country finds itself with agriculture overexpanded, why not reduce the total calorie output by converting a larger fraction of it to meat and livestock production? About seven times as many acres are needed to produce a billion calories of meat, eggs, butter, cheese and other dairy products as a billion calories of food cereals. To the extent that such measures are feasible, they serve nutritional ends and also bring balance and stability to agriculture.

It follows from the foregoing that "food policy" includes more than food consumption—*the essence of food policy may be production-consumption adjustment.*

A third dichotomy introduced involves the distinction between soil conservation aids and payments disguised to shift production to soil-conserving crops. These became combined more or less when the Soil Conservation and Domestic Allotment Act was passed in 1936. The Supreme Court had said in the Hoosac-Mills decision that processing taxes could not be collected to pay farmers for not producing too large an acreage of a crop. The new Act compensated the farmers for shifting from a soil-depleting to a soil-conserving crop and carrying out sundry soil-conserving practices. It happened that the crops in surplus were mostly soil-depleting and hence the two objectives could be combined. Professor Schultz agrees that the 1936 Act contributed importantly to the better use of soils, but concludes that it did not redress the agricultural imbalance. One inter-

pretation of the AAA legislation, however, is that it was not intended to reduce the total agricultural output, but instead to shift production out of the surplus crops. Henry Wallace thought of it mainly in these terms, as indicated by his constant reference to the AAA program in terms of "balanced abundance." M. L. Wilson, Mordecai Ezekiel, and most of the others who helped frame the early legislation were also thinking in these same terms. The 1936 Act was in fact drafted largely in this spirit. It was partly because Chester Davis was not much in sympathy with this line of thinking that he dropped out of the AAA program at that time.

The pertinent query at this point is whether the experience under the 1936 Act before the war demonstrates that combining these two approaches to conserving the soil is feasible in view of the politics of the situation. In the case in hand, two measures were soon added that largely submerged the soil conservation features. The first provided "parity payments" to make up for deficiencies in prices received, and the second raised the loan rates to price-pegging levels. There is no gainsaying that large acreage shifts in the desired directions followed. But yields rose almost enough to offset the declines in acreage of the surplus crops.

The fourth dichotomy played up in this book is the most pertinent of all from the standpoint of the objectives of the book. It is the distinction between problems *within* agriculture and problems *between* agriculture and the rest of the economy. It is the latter that is the primary concern of this book. The question to be raised here is whether they can be as neatly separated as implied by such a dichotomy. Consider such a paragraph as the following:

"In this study we shall attend primarily to the *between*, and only secondarily to the *within*, problems affecting agriculture. The *over-crowded and underproductive employment* in agriculture is a problem that has its origin largely in our developing economy. It is inherent in the forces shaping the supply and demand for farm products. The *instability of the income from farming* stems chiefly from business fluctuations. To understand this one must understand our business economy. To remedy it one must turn to fiscal-monetary policy and related measures. The *pricing of farm products* to facilitate the best use of agricultural resources and to channel farm products to consumers—not too largely into storage bins—has become both a national and an international problem."

Is it not pertinent to ask whether the forces shaping the *supply*

of farm products are not mainly *within* agriculture, whether developments within the agricultural part of our developing economy are not important as a factor in the fortunes of agriculture as well as the developments without? And is there any more merit in saying that agriculture has been suffering because industry is relatively underexpanded than in saying that it has been suffering because agriculture is relatively overexpanded? The high birthrates, after all, are on the farm, not in the cities.

But this is all quibbling over words. Why not say simply that agriculture is closely dependent upon the general economy, and that this book concerns itself mainly with this dependency. But no, we must have a dichotomy.

This reviewer, it is admitted, is a little perturbed at the moment over the present absorption of the public in dichotomies. We have had a vast amount of writing in this vein in recent years. Hayek was telling us a year ago in his *Road to Serfdom* that we must turn from planning back to free competition—or else. Most of us realize that the effective economies of the future will combine an increasing amount of planning with measures to preserve as much free competition as possible.

The Bureau of Agricultural Economics fell into the same trap in its *What Peace Can Mean to American Farmers*. It offered just two choices—price supports plus commodity payments, and competitive prices plus aids to readjustment. As a matter of fact, several other choices are available—perhaps all better than either of these. One can understand how Congressmen do not like having someone point a finger at them and say: “You vote for this one—or else.”

As a matter of fact, governmental measures seldom fall into neat logical *either-or* patterns. Neither do systems of government. If the people of this country were to decide ten years from now in favor of a socialistic state and start in that direction, they would find themselves proceeding a step at a time and would never arrive at the point toward which they started. It is highly unlikely that our people will choose either one or the other of Professor Schultz's alternatives—parity prices as is, or forward prices at equilibrium levels. The question is rather what mixture of these they will accept. So doing, they will be the despair of the professors, and of the writers of books. But possibly theirs will be the greater wisdom in the end!

Queries

With the foregoing as background, let us now proceed to introduce more systematically the questions that have been raised in the class discussions.

Production and Price Outlook

Professor Schultz has no doubts that prices of farm products will press on their markets within a few years and that they will continue to do so. He says specifically, "What data there are all point to a slowing down in the growth of demand and an acceleration of the supply. The main forces responsible for this pattern of development are (a) a slackening in the increase of the population, (b) the effect of the low income-elasticity of farm products as people become richer, and (c) the technical revolution in progress in agricultural production. These forces are secular, making themselves felt in the long pull, not only in the American economy but in other countries as well. They may be hidden temporarily by war or by trade fluctuations. But they are forces that already had their head prior to World War I; they moved on persistently during the interwar years; and they have not been checked by what has happened during World War II. On the contrary, they have gained momentum and their effect will be sharply in evidence after the war."

As a consequence of the foregoing, he expects the parity ratio to drop from 115 to somewhere between 80 and 90.

This of course is a very different prognosis from that in Pearson and Harper's *World Hunger*. There we are told: "The current ideas of great world surpluses contradict the laws of nature, the history of mankind, and the realism of Malthus. . . . Although most of man's existence has been blighted with food shortages, there have been occasional periods when there was a relative abundance of food in some regions. Soon after the western hemisphere was opened up, immigrants flowed to North and South America and relieved somewhat the pressure of population on the European food supply. These immigrants produced increasing amounts of food and had a sharp rise in their standard of living even though the population expanded rapidly. For about a century, half the world had what might be called a relative abundance of food. Man ate well, ate white bread instead of black, and ate increasing amounts of animal products."

To this same period of relative abundance ending around 1900,

E. Parmalee Prentice in his *Food, War and the Future* applies the term, "a century of grace." We are told in his book that pressure of the population in Europe on the food supply is what caused World Wars I and II, and that the decline in the rate of population growth in Europe, and even in the United States, has been due to the growing scarcity of food. Pearson and Harper are equally sure that food shortages caused the two wars. They expect food supply to increase in the coming decades, but not as rapidly as the population.

Some of the exponents of full employment have difficulty in accepting Professor Schultz's projection of the future, and would almost prefer the Pearson and Harper outlook. They have difficulty in believing that the working classes and the farmers would not upgrade their diets with sustained higher incomes sufficiently to absorb all of the increase in food production arising under these conditions. Professor Schultz himself says that if industry and trade would increase 45 percent during the next decade while agriculture was increasing perhaps 15 percent, this would go a long ways toward absorbing agriculture's excess labor.

Obviously some important uncertainties becloud this particular horizon. First, we really have no way of prejudging the rate at which farm people would migrate to the cities if full employment, defined in Beveridge's terms as more manless jobs than jobless men, were actually realized. Neither can we forecast safely the effects of the revolutionary developments in mechanization now under way on farms. Nor can we judge the income-elasticity of foods in a period of full employment by historical series drawn from an unemployment economy. The volume of agricultural output will depend in a large way upon the level at which prices of farm products are sustained. Professor Schultz predicts that a level of 90 percent of parity as now figured will induce a 15 percent increase in the farm output of the United States in the next decade. Suppose, instead, that Congress undertakes to establish 100 percent of parity as the price level, or includes labor in the computation of parity.

Agricultural History, 1895 to 1940

Bearing much on the foregoing is the way in which the agricultural history of the years since 1895 is written, and especially the history from 1895 to the first world war. This early period was marked by strongly rising food prices. Pearson and Harper describe it as follows: "About 1900 this period of relative abundance began

to draw to a close. The population was increasing faster than food supplies, and the consumption of the highly prized meats was decreasing. A world-wide campaign was initiated to make two blades of grass grow where one grew before. This period of scarcity was *temporarily* (italics mine) arrested by World War I, which reduced the number of European consumers with no diminution of food production."

Professor Schultz's interpretation of the period from 1895 to the First World War is that *it* was the *temporary* phase and that the surpluses since indicate the secular trend. Temporary scarcity first became noticeable around 1900, according to the studies of Notestein for the Office of Population Research, Princeton University, because industrialization was at that stage in several important European countries in 1900-1915 when it is accompanied by rapid population growth. Notestein points out that population grows rapidly in the first half of a period of "industrial revolution" in a country, but that presently birthrates begin to decline, and finally fall to a level that may not even maintain the population. Russia is now in the first phase of such a revolution. Much of Western Europe was still in this phase in 1900-15. Notestein's analysis indicates that the population of Europe as a whole, excluding Russia, will level out around 1960-65, and of Europe including Russia by the end of the century.¹

Another aspect of the same question is the expansibility of agricultural production. Although Pearson and Harper expect the population to press upon the food supply in the coming decades, their geographical speculations incline them to believe that the cultivable land on the earth's surface can be increased from the present 4 percent to 7 percent of the land surface and that output per acre can be increased still more. Professor Schultz quotes approvingly an estimate by the BAE that the United States could supply nearly two and one quarter times as much food nutrient as was supplied in 1943, if it were given time enough.

But Professor Schultz also says that there is "no appreciable amount of slack within agriculture; resources, as a rule, are fairly fully employed and it is difficult technically to bring additional resources into use in less than two or three years." In support of this statement he points out that agricultural output increased only 33

¹ At the recent meeting of the Population Association of America, Kimball Young raised the question whether we have a right to assume that industrialization will have the same effect on the population in a totalitarian country as in a democratic country.

percent between 1935-39 and 1944 while industrial output was increasing 135 percent. Most of us would agree that agricultural production cannot be expanded as easily as manufacturing production. However, if the farmers could have been assured of an unlimited outlet for their foods and fibers, and labor, raw materials and machinery had been made as available as they were for industry, agriculture might easily have expanded a half or more. We do not really know what agricultural production would have done in four years if given the same opportunities as industry. Perhaps even more important, we started the war with a surplus psychology and many farmers were still fearing over-production as late as 1943.

Moreover, Professor Schultz's term "fairly fully employed" needs more definition. Land used in growing potatoes in Aroostook County in Maine can be maintained at a wide range of levels of productivity that will yield 150 bushels per acre, or at a much higher level that will yield 350 bushels. As pointed out in the last issue of this JOURNAL, in the Note on "Tailored Credit for Land Improvements," Darryl Francis's sample farm at St. Joseph, Missouri, can have \$10,000 worth of improvements added to it with a doubling of its yields, or half of this amount with an increase of half in its yields. These improvements can be added in a three-year period as Francis assumes, or they can be stretched over ten years. If land generally were improved at the faster rate, we would be burdened by immediate agricultural surpluses. If this nation were really in need of a large increase in food during a war or some other emergency, and would divert the necessary resources to it, agricultural output could be stepped up very fast on much of its land.

The Consumption Outlook

Professor Schultz does not expect improvements in diets to contribute much to the expanding of agricultural outlets. He expects us to make our food dollars go farther as we learn more and more about feeding ourselves. He says, "In this respect the advances in nutrition are a kind of a technological progress enlarging the range of satisfactions for people in the area of available food production and making apparent how better diets may be obtained at less cost." (p. 74) The usual line of analysis runs in terms of the consumption of more of the expensive foods as income increases. Are we to discard this altogether? Pearson and Harper seem to expect the world to eat less of the more costly animal foods as the decades go by because the population will increase faster than our food pro-

duction. If they could be made to believe that the opposite of this is going to happen, they would probably expect to see more animal products eaten. Professor Schultz expects to see the food supply gain on the population, but apparently less use of the more expensive foods at the same time. Or if not this, at least some technological improvements in food processing and the like that will more than offset the increased use of animal products. Apparently here is a subject that needs to be explored further.

Attempts to show how much of the increased income of the people of the United States will be spent for food on the basis of historical evidence are not likely to be very convincing. Professor Schultz's Tables 1 and 2 in his chapter on the "Unequal Growth of the Demand and Supply for Farm Products" appear to show too much. In both of them the real expenditures on food appear in the main to have declined as real national income per capita has increased. Of course if technologies were advancing faster in agriculture than in industry, such results could easily appear. But in fact, industry's gains have been much the more rapid. It is entirely possible that Professor Schultz has a refined analysis of these data somewhere up his sleeve that justifies our taking them seriously as they stand. Without more analysis, one must be excused from doing so.

As for the outlook for consumption of our foods in other countries, Professor Schultz apparently is not expecting very much of an increase. His main conclusion is that our imports of agricultural products will expand more rapidly than our exports. To understand such a statement for what it is worth, however, one must keep in mind the distinction between complementary products (those that can not be grown in the United States, like coffee, tea, chocolate, bananas, etc.) and supplementary products (those supplementing our own production, such as sugar, wool, flax, and beef). (Tables for both are included.) One would expect that as our national income increases, we will expand considerably our consumption of complementary products. Our concern is mainly with the supplementary products. It is difficult to forecast what will happen to our exports of these. Possibly FAO will be effective in getting importing countries to buy more foods of types that they can import more cheaply than they can produce. The United States may find itself able to produce an increasing amount of some farm products at costs that make it advantageous for other countries to import them. If so, however, they must have dollar exchange, and we must be willing to accept their imports.

An interesting subject for speculation is the effect of industrialization of other countries on their food imports. Will their agriculture improve and expand along with their industries? Will Russia in the midst of a great industrial revolution shortly find herself importing food? The evidence seems to support a negative answer to this question. Even China and India are likely to improve their agriculture fast enough to provide the food for any potential growing industrial populations. Only when countries become as specialized in manufacturing as the United Kingdom and Belgium do they draw upon the outside world for a considerable part of their food.

Professor Schultz seems to accept the argument to the effect that this country should not be exhausting its virgin soil resources in order to produce cheap exports for the benefit of other nations. Henry Wallace, when he was Secretary of Agriculture, frequently advanced this argument. Many economists have been inclined to say, however, that virgin soils can be mined to advantage just as coal is mined, as long as the process is not carried too far. The important consideration in such a case is the productivity level at which it is economical to maintain our soils. Withdrawing virgin soil resources down to this level may be good economy. The level will vary for different parts of our country mainly according to the principle of comparative advantage; and similarly for different countries. Under a long-run beneficent international policy, it would be desirable for this nation to share its soil reserves with those of other countries if they would reciprocate. Lacking such an international policy, however, the United States may want to husband its soil resources just like its oil resources. Apparently this argument is not as simple a one as Henry Wallace assumed.

Also some soil scientists at least will be inclined to question the extreme form of Professor Schultz's statement that restoring eroded soils usually entails a very high cost. Some soils, it is true, such as those with a thin topsoil overlying gravel, or shallow soils overlying bedrock, may be ruined for all time by erosion. Those with reasonably good subsoils, however, are commonly restored at relatively low expense. While they are losing their topsoil, their yields decline year after year until they no longer return expenses. In the restoration part of the cycle, the outputs often cover the input costs after the first year or so, and thereafter with increasing margins. Some soil types have as productive subsoils as topsoils and the bad effects of erosion are mainly the gullying. In similar vein, although soil erosion and soil depletion are indeed different physio-chemical

processes, as Professor Schultz states, their economic significance may differ very little. (P. 245.)

Migration from Farms

Professor Schultz's principal point under this heading is that the migration of labor is timed exactly the opposite from what it should be. When farm incomes are high, farm workers migrate to the cities. When they are low, they stay on the farms. The reason for this anachronism is that the controlling factor is the availability of jobs in the cities. Prices are high on farms at the same time that jobs are abundant in the cities. While the historical record follows this pattern in the main, one should not conclude from it, as Professor Schultz appears to do, that relative earnings on the farms and in the cities have almost nothing to do with the rate of migration. The chart on Page 101 reveals that in the period from 1921 to 1929, migration was larger than one would expect on the basis of available jobs in the cities. These years immediately followed the doubling of real wages in city employments at the end of the First World War, with farm incomes and farm wages remaining well below this level. Migration out of farming was at the rate of about 630,000 in these years. In the period from 1935 to 1939, however, the all-compelling factor was lack of opportunities in cities.

Professor Schultz is, of course, right in his emphasis on the importance of industrial expansion in stimulating migration out of agriculture. The more nearly that wages and earnings in city and on farms are equalized, however, the less will be the impact of such opportunities.

Stabilizing Incomes

As indicated above, the procedures advanced in this book for stabilizing farm incomes are fiscal-monetary measures, compensatory payments, crop insurance, and various forms of aid to depressed areas. A few further comments are needed on each of these.

Professor Schultz sagely remarks that "in recent years farmers have abandoned their grand march for managed money and a stable price level. Fiscal-monetary aims have been put aside as too theoretical, remote and all inclusive. Farm leaders today seek more immediate gains and believe they have become more 'practical'." (P. 254.) The question may be raised, however, as to whether they ever did have much interest in *fiscal* measures. The bill of goods

that was sold to farm organizations was purely monetary. They had not yet heard about Keynes and his doctrines. They were still strongly enough behind purely monetary measures to authorize them in the legislation of 1933. The interest of the agricultural public in monetary measures, moreover, had acquired its strength in the period of a decline of prices and particularly of land values following World War I. It had acquired similar strength following the booms and depressions of the 1870's and 1890's. The interest was mainly in a *cheaper* dollar and not in a more stable dollar. The farmers' loss of interest in monetary measures in the 1930's of course followed closely upon the devaluation episode. The need at present is for a vigorous program of education in the *fiscal* part of Professor Schultz's "first line of defense," for who can doubt that we are not going to need such measures some time within the next ten years.

The compensatory payments proposed as an offset to business depression effects have much in common with the "parity" payments made during the latter 1930's for the purpose of making up for the failure of the AAA program to hold prices at the parity level very nearly achieved in 1937. They are to be on a commodity basis the same as the parity payments. They are to be based on price deficiencies, however, rather than income deficiencies. (The use of incomes rather than prices for distributing parity payments among cotton, wheat, corn, etc. was largely illusory.) The principal difference is that the base period used is the period immediately before the depression rather than the distant 1910-14 or 1919-29 base. The use of a more recent base is much to be preferred, but the payments so determined are likely to be erratic because even a three-year period is not enough to average out the eccentricities of weather and markets.

Perhaps it is a valid comment that the compensatory payment proposal seems to be based on an assumption of orthodox business cycles. This means that it will not apply very well to any post-war depression, and neither will it fit in very well in periods of persistent agricultural maladjustment. This leaves a wide possible scope for the use of income-deficiency payments. The proposals in the book are not altogether clear for periods of these latter types.

Professor Schultz insists that a long run of years is needed in the high-risk areas before a system of crop insurance can be expected to show anything like a balance of receipts and expenses, and that the

essence of such insurance is to carry the farmers during the long series of bad years that often occur in these areas. The reviewer is in full accord on these points.

Price Policy

That the proposal to set prices of farm products at levels that will bring forth only the supplies that the markets will absorb, will not be acceptable to the present law-making personnel is obvious enough from recent reactions to suggestions of this sort and from attitudes toward the BAE. Perhaps the time will come when Congress will accept such a structure of farm prices; but it will not be until such measures as export subsidies and surplus diversion have been tried and found to prove more distasteful than they are now. The recent raising of many union worker's wages by 15 percent or more, plus the recent attempts to establish minimum wages of 65 to 75 cents, have made acceptance of equilibrium prices even less likely than it was.

Then follows the question—is there any other approach to the ends desired that will lead us in the right direction? In the summer of 1942, Professor Shepherd was writing his article "Basis of Controlling Agricultural Prices," published in the November issue following. In response to requests for critical suggestions, this reviewer proposed that Professor Shepherd subtend the following note over the reviewer's signature. Professor Shepherd demurred, saying that a separate article was needed. The proposed note seems to apply to Professor Schultz's price policy proposals as well as to Professor Shepherd's, and perhaps to have a little of the quality of prescience:

"I agree with Dr. Shepherd that we will have considerable forward pricing after the war is over. He does not argue against the point that these will be set too high and result in an accumulation of stocks of non-perishable products, but says these "will force a revision of price policies." I agree with this latter statement too, but not with the possible implication that prices will presently be revised to an equilibrium price level. Instead, they will only tend to be revised in that direction. Two types of moves will follow upon the accumulation, one, to put the production under quotas, the other, to step up "surplus distribution," both calculated to make it possible to hold prices at the desired level above the equilibrium. I am not sure about the first move. We may have had our fill of "crop control" by that time. Neither am I sure of the second; but it is more probable than the first. We surely will have one or the

other, and probably we will have both of these measures undertaken.

"Dr. Shepherd says that this additional distribution and consumption will be merely an additional "demand" which makes possible a higher equilibrium price. But it will not happen that way—at least, not for some time. The forward prices will be set above any equilibriums that one is likely to select, surplus production will follow, and then distribution schemes will be devised to make it possible to hold prices at the desired level. This may have to go so far as dumping into lower-value uses, dumping abroad under a two-price system, and the like.

"The general effect of this experience may well be to lower the forward prices set, but it will be some time before they are lowered to an equilibrium point, even counting in as demand any anticipated distribution to low-income families and the like that may come to be accepted as normal. In the end, we may come to just forward pricing; but that end is not near.

"For that matter, it may be fortunate that the evolution will take this form. Just now our farmer 'spokesmen' are not supporting needed low-income distribution of foods. Our best chance of getting them converted is to have some sizable 'surpluses' for a long time.

"The most promising suggestion I have heard for hastening the acceptance of forward prices at equilibrium levels is that offered by Dr. Sherman Johnson and discussed in Dr. Shepherd's article. But somehow it doesn't appeal to farmer spokesmen.²

"All the time that prices of any product are being set above equilibrium levels, according to parity or some other standard, and that whatever surpluses follow are being distributed somehow or other, we shall be suffering from a confusion of the two objectives, optimum allocation of resources and optimum allocation of income. On the one hand, we shall be having producers fighting for the prices they think they need, and low-income consumer groups, and particularly their friends, trying to get a large amount of low-price food for them. On the other hand, we shall have groups in government agencies and in state extension services, largely academically minded, trying to get production shifted so that no more cotton, for example, is planted than can be sold at equilibrium levels. To the extent these latter succeed, desired allocation of income will be attained by improving the allocation of resources. To the same end, we may in time resort to such measures as increasing the size of

² This was a proposal which in normal time would have guaranteed a price for only a given amount of any product, with lower prices if more was produced.

holdings now too small, thus increasing per-capita outputs, and subsidizing the use of fertilizers, thus lowering costs.

"If some standard such as a revised parity standard might be or could be devised and come into general use during the war and in the ensuing years of postwar prosperity, and something approaching full employment could be maintained in what would otherwise be the postwar depression years, it could well happen that these 'parity prices' would not be so far out of line with equilibrium prices (subsidized food distribution being counted in) that in most cases they could be sustained, at no overwhelming burden on the treasury, simply by augmenting the distribution program for a while. Some such a development as this offers the best hope for an approach to forward pricing on an equilibrium-price basis in the not distant future. This would mean in effect a transition from one to the other. But for a long time, the parity standard would dominate thinking and programming.

"Perhaps all that is needed in the way of a revision of the parity standard is to base it upon a moving 5-year average of farm prices beginning with 1937-41 and stepping this up by the amount of the average rise in farm prices between then and May 1942 when farm prices stood at parity—an increase of $152/105.6$ or 45 per cent. (May is also the month taken as a measuring point in the War Labor Board wage formula.) This would give a structure of prices that would fit in with the war situation very well, and with the needs of the post-war as nearly as they can be foreseen now. It would leave cotton prices well below present parity levels, but no reasonable parity price standard can be devised which will not. The cotton growers are a special case requiring application of a parity *income* standard—a standard that will combine yield and prices. Perhaps the wheat growers are also." (Signed. John D. Black)

* * *

Or if perchance Congress in some future mood of desperation—as when passing the original Agricultural Adjustment Act in 1933—were to approve a program of announced equilibrium prices, what would become of it later? If the 1933 Act had been carried out as was intended by its framers, the outcome would have been very different. Likewise if Henry Wallace's granary program had been continued as he planned it. Is there any reason for thinking that legislation providing for forward pricing and compensatory payments would fare any better in actual operation?

DIAGRAMMATIC ECONOMICS

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ECONOMISTS use as their main mode of expression the vehicle of language. Two aids to literary economics have been developed: the mathematical which takes the form of equations; and the diagrammatic which takes the form of curves graphed to x - and y -axes. Diagrammatic economics is becoming increasingly popular. Seemingly current expositions of the theory of monopolistic competition are elevating cost and demand curves to a status of indispensability.

Besides their vivid appeal to the eye, diagrams are viewed as adding exactness to the presentation of economic theory. Cunynghame¹ stated: "They (curves) do not perhaps assist in original thought, but they afford a system by means of which error can be promptly and certainly detected and demonstrated" (pp 35-36). Wicksteed² in his review of Jevons' book—had this to say: "The diagrammatic method of studying economics may be regarded from three points of view:

"(i) Many teachers find in it a stimulating and helpful appeal to the eye, and use it as a short and telling way of making statements and registering results.

"(ii) A few students treat it as a potent instrument for giving precision to hypotheses in the first instance, and then for rigorously analyzing and investigating the results that flow from them.

"(iii) A very few investigators (among whom I think we must rank Jevons) have hoped ultimately to pass beyond the field of pure hypothesis and analysis, and to build up constructive results upon empirical curves of economic phenomena established by observation. . . . What may be called the 'picturesque' use of diagrams, to illustrate theory, is fatally misleading unless an absolutely rigorous and precise interpretation is insisted on; . . ." (p. 293).

Exacting work can be accomplished by the use of a tool only if the tool itself be precise. Since cost and demand curves are viewed as most effective tools with which to achieve the final touch of

¹ Cunynghame, "Some improvements in simple geometrical methods of treating exchange value, monopoly and rent," *Econ. Jour.* 2: 34-52. March 1892.

² Wicksteed, "On certain passages in Jevons' Theory of Political Economy," *Quar. Jour. Econ.* 3: 293-314. April 1889.

precision in the description of fundamental economic concepts, the question may very properly be asked, Are the curves of the diagrammatic economists exact and precise?

Objective of Paper

The main objective of this paper is to examine critically the nature of a few curves used by economists to illustrate and elucidate economic theory. The position taken in appraising and evaluating the diagrammatics of economists may be summarized under three headings:

1. Cost and demand curves are governed by the laws of cost and demand;
2. Unscaled diagrams of unit cost and demand curves are subject to scaling; the curves are subject to readings in terms of this scaling; the products of the coordinates of these curves are governed by the laws of cost and demand;
3. Unit cost and unit price are but rates—one dimension of a two-dimensional concept; the other dimension is the volume of production, or the volume of demand as the case may be.

The Law of Cost

Cunynghame formulated the law of cost in these words: "The only condition of the supply curve is that the total cost of production of any quantity shall always be less than the total cost of production of a greater quantity, . . ." (p. 40). Henry Schultz³ quoted Cunynghame verbatim (p. 104). According to Joan Robinson⁴: ". . . it is impossible that it (cost) should have an elasticity of less than unity, for it is impossible for the total cost of a greater output to be less than the total cost of a smaller output" (p. 34). Seemingly, no diagrammatic economist has related this law of cost to the behavior of cost curves.

The law of cost can conveniently be illustrated with total cost curves. The total cost curve with constant variable costs (CV) in Figure 1 represents ginning costs of the average cotton gin in Texas for the period 1930–1938. No studied attempt is made at this point to explain the linearity of variable ginning costs. This one factor, however, is significant. On an average, ginning operations use but 30 percent of ginning capacity on the basis of a 12-hour day and

³ Schultz, *Statistical Laws of Demand and Supply*.

⁴ Robinson, *Economics of Imperfect Competition*.

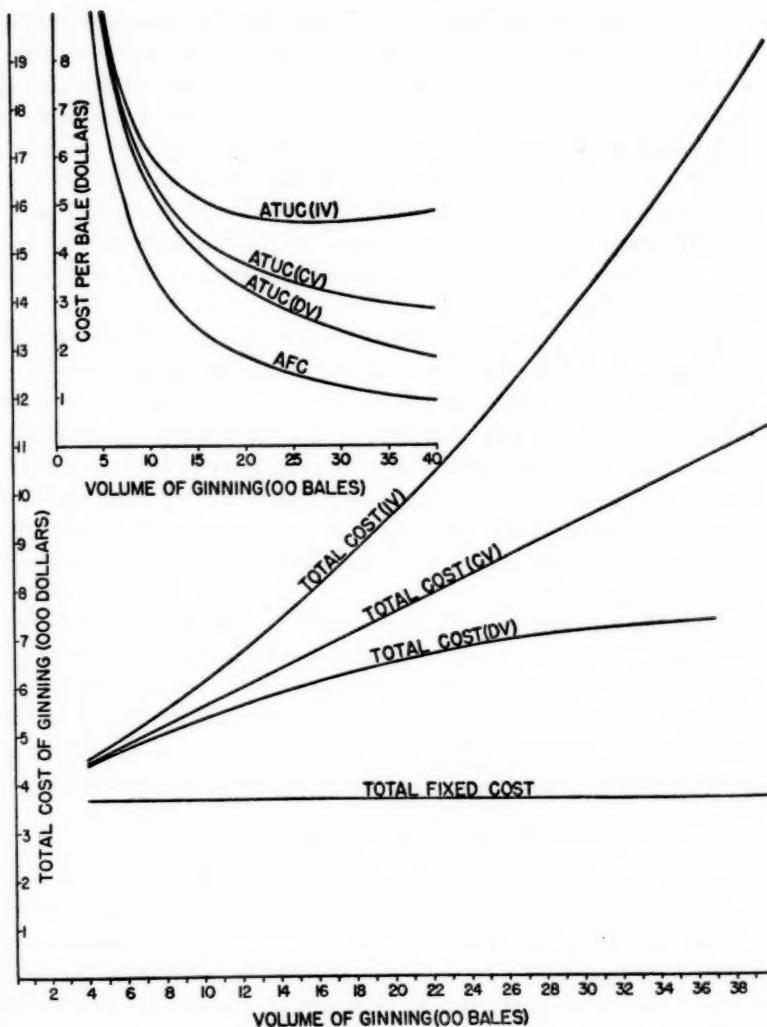


FIG. 1. LAW OF COST AS EXEMPLIFIED BY TOTAL COST CURVES. Total fixed costs and total costs with constant variable costs (*CV*) represent estimated cost and volume relations of the average gin of Texas for the period 1930-1938. The equation of this total cost curve is:

$$\text{Total Ginning Cost} = \$2035 + \$0.0879I + \$1.91V$$

(*I*—Investment in gin plant in dollars, *V*—Volume of ginning in bales.) The average investment in the gin plant for the period was \$18,848. Total costs with decreasing variable costs (*DV*) and total costs with increasing variable costs (*IV*) represent assumed costs based on the actual estimated costs. The decreasing variable costs are assumed to decrease at the rate of 5¢ for each added 100 bales ginned; the increasing variable costs are assumed to increase at the rate of 10¢ for each added 100 bales ginned. Insert: *AFC*, average fixed cost; *ATUC*, average total unit cost; *CV*, constant variable costs; *DV*, decreasing variable costs; *IV*, increasing variable costs.

but 15 percent on the basis of a 24-hour day. This applies only to the period of the ginning season and does not include the many months of the year when all doors are closed and not a wheel turns.

The total cost curves of Figure 1 with decreasing variable costs (DV) and with increasing variable costs (IV) are hypothetical. These assumed costs are derived from the actual variable costs in this manner: for each added 100 bales ginned, costs with decreasing variable costs are assumed to decrease at the rate of 5¢ a bale; and costs with increasing variable costs are assumed to increase at the rate of 10¢ a bale.

The total cost curves in Figure 1 with constant, or increasing, or decreasing variable costs agree in one essential: each curve has a positive slope. A total cost curve conforms to the law of cost by being positively sloping throughout. In other words, a total cost curve cannot have a negative slope in any part of its course. This limitation should be noted regarding the total cost curve with a decreasing variable cost. Such a curve could approach a horizontal position but it could not pass beyond the horizontal into a negative slope.

A free-hand total cost curve presents no difficulties whatsoever in graphing. Fixed cost is a horizontal line with a positive intercept. The position of the intercept depends upon the relative amount of the fixed cost. The total cost curve adding variable costs to the fixed cost has a positive slope. It is linear, or concave, or convex, or various combinations, depending on the nature of the variable costs.

Free-hand Unit Cost Curves

As the analysis below demonstrates, economists drawing free-hand unit cost curves have been totally unaware of the inherent complications in such curves. Fixed cost so simple to graph as a total is rather annoying as a rectangular hyperbola in the unit form. This fact is illustrated in the family of rectangular hyperbolas in Figure 2. These two characteristics of unit curves of constants are pertinent: 1. As the constants increase, the unit curves increasingly "flatten." 2. At a given level on the y -axis, or x -axis, say 12, as the constants increase, the x values, or y values, increase; thus the curves are at increasing distances from the y -axis, or x -axis. This behavior of fixed cost is of vital concern in graphing unit cost curves of increasing scale to common x - and y -axes.

A second complication is faced in adding the unit variable cost

to the unit fixed cost; the variable cost may be constant, or decreasing, or increasing, or combinations of the three types. It should be apparent that the technique requisite to graphing free-hand unit cost curves so as to comply with the law of cost, on the one

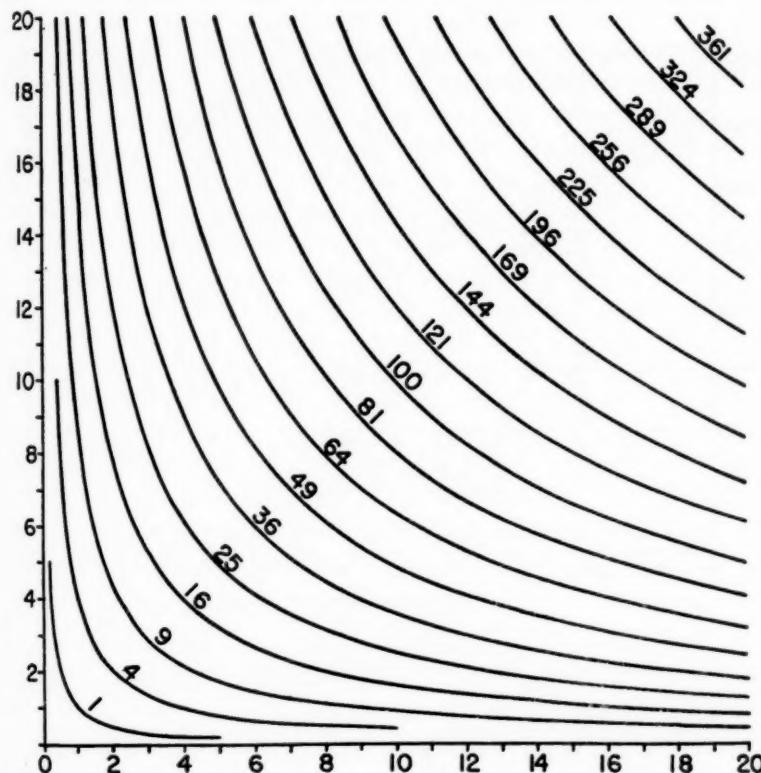


FIG. 2. A FAMILY OF RECTANGULAR HYPERBOLAS. As the constants increase in size, the "flatter" the curves become. At a given level of x , say 10, the larger the constants, the greater the y values must become to yield the increasing constants.

hand, and so as to portray correctly the combination of fixed and variable cost, on the other hand, is quite beyond human ingenuity to execute. The practice of drawing free-hand unit cost curves had better be completely abandoned.

Law of Demand

Economists have long recognized the unit demand curve as being

either horizontal or negatively sloping. Figure 3 illustrates the total demand curve for potatoes at the growers level for the 11-year period 1929-30 to 1939-40. The negative slope of the total demand curve signifies that the larger the potato crop produced, the lower

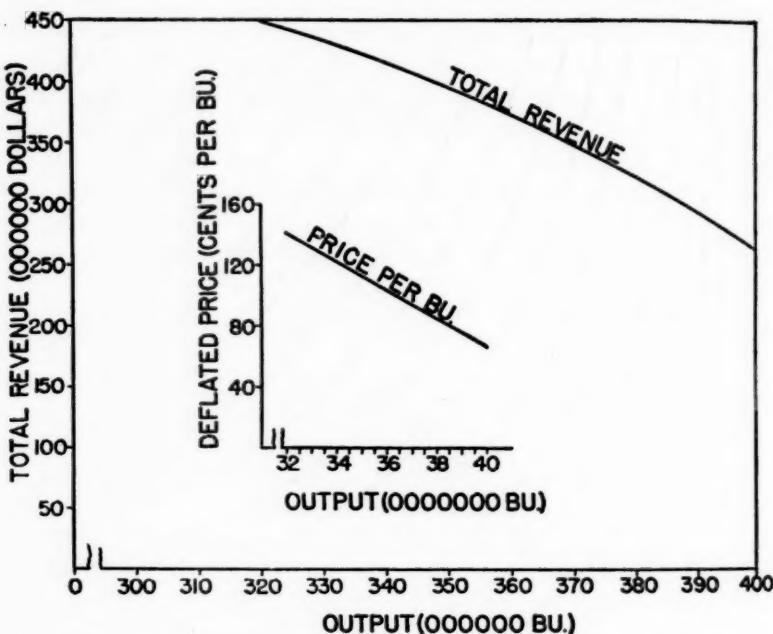


FIG. 3. THE LAW OF DEMAND. The unit demand curve is either parallel to the x -axis or negatively sloping; it cannot be positively sloping. The total demand curve can never be convex to the x -axis. The total revenue curve represents the total revenue to potato growers of the United States, according to the size of the crop, for the 11-year period, 1929-30—1939-40. The insert shows the price per bushel to growers for the same period. Total revenue and unit prices were corrected for price level. These data were taken from Shepherd, *Agricultural Price Analysis*, Table 16, p. 196.

the total revenue to growers. The fact of the total demand curve being concave to the x -axis reflects increasing inelasticity of demand with increasing output. The horizontal unit demand curve and the linear total demand curve were omitted from Figure 3 because of their obvious simplicity.

The law of demand may be stated advantageously in terms of unit demand. The unit revenue on a quantity of goods cannot exceed the unit revenue on a lesser quantity of goods. In other words,

the unit revenue curve is either horizontal or negatively sloping; it may not be positively sloping. If the unit demand curve be horizontal, the total demand curve is linear; if the unit demand curve be negatively sloping, the total demand curve is concave to the x -axis. The total demand curve cannot be convex to the x -axis.

The possibility of a positively sloping demand curve cannot be entirely ruled out. Marshall called attention to a possible situation of a positive demand curve (7th ed. p. 132). Bread could become so expensive that the low income laborers could no longer afford to buy meat and other foods. Then as bread became the exclusive item of diet, more bread would need be bought in spite of rising prices. ". . . and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it. But such cases are rare; when they are met with, each must be treated on its own merits."

Exceptions do not necessarily void a rule. The atomic weight of hydrogen is a close approximation of 1. But ever so often the atom of hydrogen is double. Because of these exceptions are chemists concluding that the atomic weight of hydrogen is not 1? If such were the case, what would happen to the science of chemistry? In spite of possible occurrences of positively sloping unit demand curves, the general principle stands intact: the unit demand curve is either horizontal or negatively sloping.

Unit Cost and Unit Price as Rates

The point can scarcely be over-emphasized that unit cost and unit price are but rates. These rates have no significance if divorced from the other dimension-volume of production in the one instance, or volume of demand in the other. The statement that the cost of ginning is \$6 a bale is devoid of precision unless the other dimension be added—at a volume of 900 bales. Much error both in economic theory and in diagrammatics is traceable to a failure to grasp this fundamental truth.

In the early development of diagrammatics in economics, total curves played an important part. This could but reflect a common usage of total concepts in economic theory. The day when total curves were superseded by unit curves was a most unhappy one; a sound development both of theory and of graphics suffered a substantial setback.

Curves of Auspitz and Lieben

Discussions of the origin and development of graphics in economics usually take this form: "Cournot probably originated the use of graphics; Marshall revived an interest in graphics." The neglect of Auspitz and Lieben⁵ seems difficult to understand. These

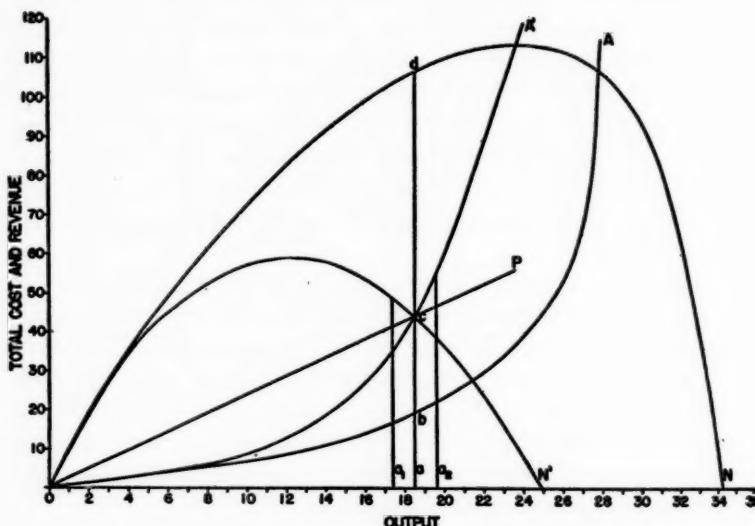


FIG. 4. BASIC FIGURE 5 OF AUSPITZ AND LIEBEN. (*Untersuchen über die Theorie des Preises*, Leipzig, 1889, p. 17.) All curves are totals for an annual period. OA' , total cost of production; OA' , total supply offered on market; ON , total utility; ON' , total demand; OP , total revenue paid on market according to supply sold. The intersection of curves OA' and ON' at C represents the equilibrium output; ab , total cost to producer at equilibrium volume; bc , his net profit; ac , total price paid by consumers for equilibrium volume; cd , consumer surplus. Both volumes Oa_1 and Oa_2 represent disequilibrium.

German economists in their text published in 1889 used nearly 100 figures to illustrate all phases of theory: equilibrium under conditions of pure competition and monopoly; effects of increases and decreases both in costs of production and in demand; the relation of purchasing power to demand; the influence of increasing supply of money on cost and demand; the consequences of increasing taxes on cost and demand; etc.; etc.

⁵ Auspitz and Lieben, *Untersuchen über die Theorie des Preises*.

Figure 4 is a reproduction of basic Figure 5 of Auspitz and Lieben. All curves represent totals for an annual period. OA is the total cost curve of the whole industry. Individual producers are arrayed according to an ascending order of total costs. Each producer is assumed to produce under increasing costs from the first unit upward; this supposition is a fundamental error, considering the importance of fixed costs.

OA' is derived from the cost curve OA ; it pictures the supply offered on the market. According to Cunynghame (p. 44), OA' is derived from OA by multiplying the accumulated total production by the increasing unit cost of each succeeding producer. According to Henry Schultz (p. 109), OA' represents the accumulated total cost of the successive producers. ON is the total utility curve; ON' is the demand curve derived from ON . The assumption that total utility can be graphed is most fantastic.

The intersection of OA' and ON' at C marks equilibrium under pure competition. How is equilibrium attained? The main responsibility seems to be placed on one producer. He must know the behavior of the demand curve ON' . He is the last producer in the array who happens to find himself directly under the point C . It seems that this producer must know both the total production and the total cost of all producers with lower total costs than his own for a whole year in advance. A considerable amount of production at a profit could occur at a volume beyond the assumed equilibrium. But apparently these producers graciously retire from the field to join another array of producers in another industry with the hope of finding their rightful place before the point of equilibrium be attained. Under the assumptions of Auspitz and Lieben, equilibrium would seem to be the equilibrium of a pyramid balanced on its apex.

For the producer at the point of equilibrium, ab represents his cost; and bc his net profit; cd represents surplus to consumers. Apparently economic optimism did not perish with Bastiat and Carey.

Walras criticized the graph of Auspitz and Lieben in that the supply and demand curves intersected at but one point. With a series of diagrams of which Figure 5 is the 15th, Lieben managed to create a diagram with five intersections. This figure, however, shows only the total cost and the total utility curves. These curves are not directly relevant in establishing equilibrium as pictured in

Figure 4 above. Lieben apparently found his figure much too fantastic with the two derived curves included. This figure rightfully belongs in a museum exhibiting the curiosities of human imagination.

Economists of today would do well to ponder over the graphics

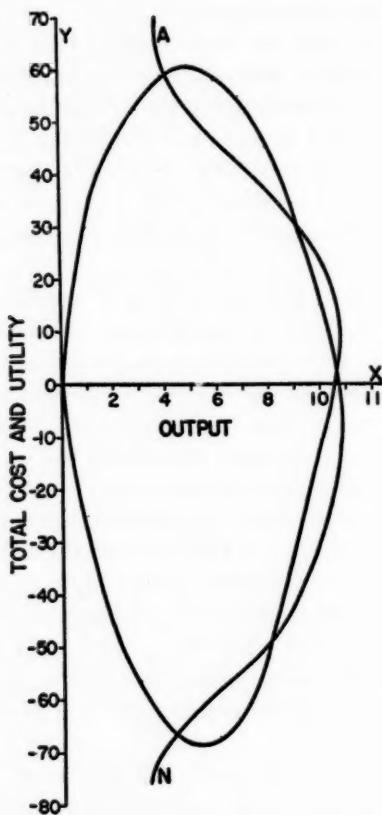


FIG. 5. Walras criticized the basic Figure 5 of Auspitz and Lieben because the supply and demand curves intersected at but one point. This figure is Lieben's answer to this criticism; Auspitz had died in the meantime. (Lieben, Die mehrfachen Schnittpunkte zwischen der Angebots- und Nachfragekurve, *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* 17: 607-616.)

of Auspitz and Lieben. That this system utterly collapsed because it was blemished by fatal error should not be without warning. These Germans, however, were sound on two points: they employed

total curves; they depicted cost and demand over a definite period of time.

Demand Curve of Cunynghame

Figure 6 is a reproduction of Cunynghame's demand curve (p. 37). However, the broken lines AC and CE and the scaling of the axes have been added. This interpretation of the figure is made:

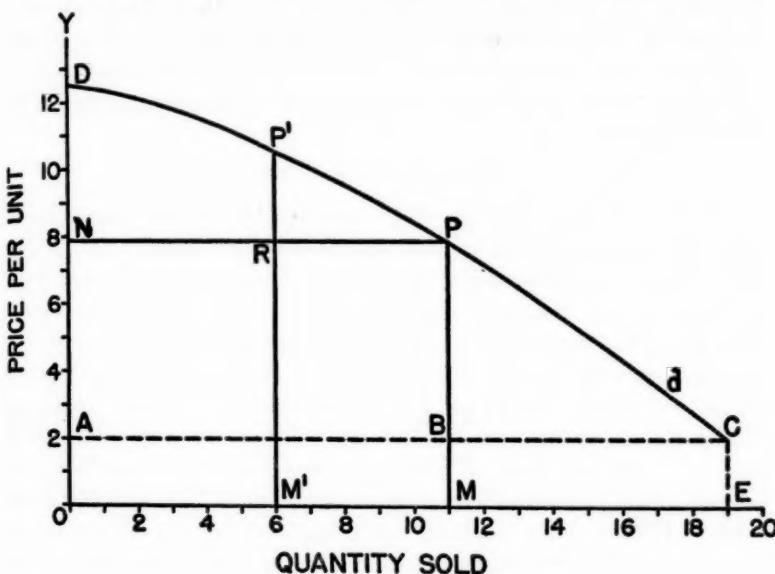


FIG. 6. Demand curve of Cunynghame (Figure 2, p. 37). Dd , demand curve; PM , price at point P ; OM , output; $PM \times OM$, total revenue; CE , price at point C ; OE , output; $CE \times OE$, total revenue. As the unit price drops from point P to point C , the area $ANPB$ (greater) is subtracted and the area $MBCE$ (smaller) is added.

"Hence when OM of the article is taken, the total price given for the whole is measured in money by $OM \times PM$ = the area $NPMO$." Clearly, Cunynghame recognized that unit price is a rate and that the significance of this rate is to be found in conjunction with the other dimension, total quantity.

Did Cunynghame apply the principle of unit price times the amount taken to all points on the demand curve? In his discussion he stated the law of demand in these words: "The only condition respecting the demand curve is that the total money given for any given total quantity of an article shall always be greater than the total money given for a less total quantity of that article" (p. 39).

This statement contradicts his demand curve. Furthermore, the farm problem of the past 40 years has, in large part, persisted because of the fact that farmers rather generally receive a lower total return on a larger output than on a smaller output. Figure 6 shows vividly how the total price is reduced in passing from the unit price PM to the unit price CE ; the area $ANPB$ (larger) is subtracted and the area $MBCE$ (smaller) is added. What has happened to Cunynghame's infallible curves in that "they afford a system by means of which error can be promptly and certainly detected and demonstrated?" He failed to apply the general principle "unit price times quantity taken" to all points on his demand curve.

Cost Curves of Viner

In the opening sentence of his article, Dr. Jacob Viner⁶ states that his purpose is "to develop a graphical exposition . . ." (p. 23). His Chart I is presumably drawn according to hypothetical data. "Where in any chart one curve is derived from another or a combination of other curves presented in the same chart, it is drawn mathematically to scale" (Note 1, p. 25). He also states: "Amounts of output are in this (Chart I) as in all succeeding charts measured along the horizontal axis from O , and money cost and prices along the vertical axis from O " (p. 26). Anyone at all familiar with rectangular hyperbolas would note instantly that the unit fixed cost curve AFC in Viner's Chart I is misplaced in its relation to the x - and y -axes. As the curve is located, it is manifest that xy does not equal c . In a scaling to tenths of inches, the y -axis is nearly $2/10$ of an inch too far to the left.

Chart III of Viner (p. 33) was scaled and readings made of all four unit cost curves. These readings were transformed into total costs. These total costs are graphed in Figure 7. In the early phases of all four curves the law of cost is violated. It seems that the shape and slope of the unit curves were varied, perhaps, for the sake of breaking the monotony of identical shapes and slopes. The third curve to the right has the steepest slope. The unit cost curves in the upper insert are graphed according to the same data as the total cost curves in Figure 7. Of primary concern is the closeness of correspondence between the curves of Viner's Chart III and the

⁶ Viner, "Cost curves and supply curves," *Zeitschrift für Nationalökonomie*, 3: 23-46, September 1931.

curves of the insert. The exaggerated positively sloping part of the curves is not shown in the insert. The marginal cost curves of Chart III are also omitted. These curves are grossly in error. The

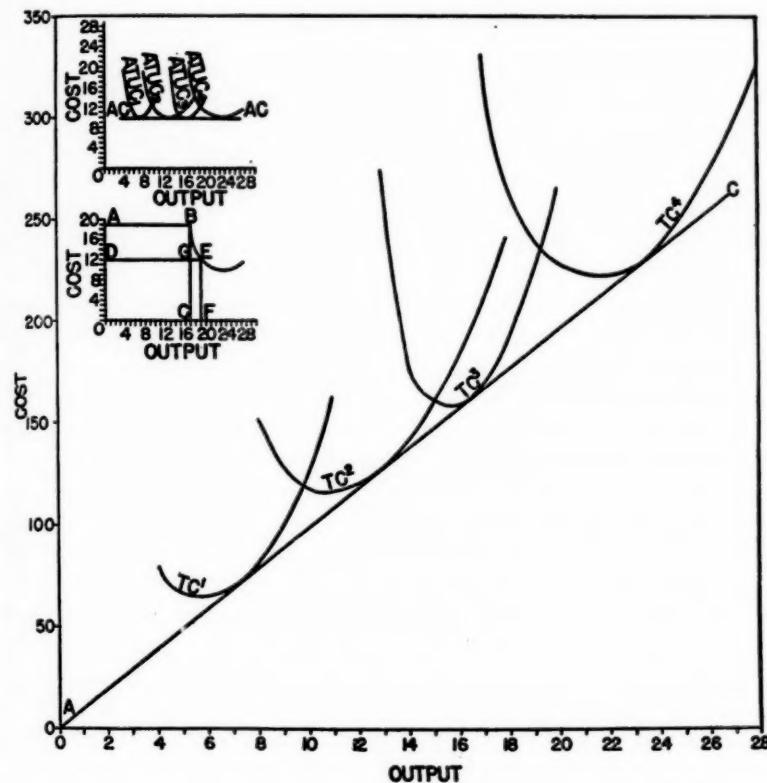


FIG. 7. Unit cost curves of Viner's Chart III (p. 33) shown as total cost curves. AT^1 , constant average unit costs at least cost point of plants of varying scale transformed to total cost; $TC^1 \dots TC^4$, total costs. Upper insert. $ATUC^1 \dots ATUC^4$; unit costs according to the same data as those of the total cost curves, $TC^1 \dots TC^4$; these unit curves correspond to the unit curves in Viner's Chart III. Lower insert. Unit cost curve $ATUC_4$; at point B , total cost is represented by the area $ABCO$; in dropping from B to E , total cost is decreased by the area $ABGD$ (larger) and increased by the area $EFCG$ (smaller).

marginal curve of a total curve with a negative slope is negatively sloping and it lies below the x -axis.

The lower insert shows two unit costs as total cost areas. As unit costs drop from B to E , the area $ABGD$ (larger) is subtracted and

the area *EFCG* (smaller) is added. This shows vividly the nature of a unit cost curve drawn with "too steep" a slope. Dr. Viner in graphing these curves overlooked the fact that unit costs are but rates. A unit cost should never be considered separately from its other dimensions-total output.

Graphing Unit Costs Composed of Fixed and Constant Variable Elements

Joan Robinson illustrates the behavior of unit costs under the circumstance of costs being composed of two elements: a fixed cost; and a constant variable cost (pp. 38-39). In the hypothetical case, the cost of a die, the fixed cost, is 100£; the variable cost is 1£ per medal; and the output is 100 medals. A table is given showing, in part, such items as: number of medals; total cost; average cost; and marginal cost. Average and marginal costs are shown graphically in Figure 14. It seems reasonable to assume that the total output shown in Fig. 14 is 100 medals; and that the *M* intercept on the *y*-axis represents a scale of 1£. The two axes were appropriately scaled and readings made on the *A* curve.

Figure 8 shows total costs graphed according to the table and according to Figure 14. It is manifest that Curve *A* in Figure 14 was not drawn to scale according to the table of hypothetical costs but rather free-hand. Curve *A* is far "too flat" and too near the *x*-axis. Not until the 64th medal is reached does the average curve cover even the fixed cost. The upper insert is a reproduction of Joan Robinson's Figure 14; the lower insert is graphed according to hypothetical unit costs in the table.

Graphing Theoretical Items of Cost

Dr. John D. Black⁷ was one of the first economists to break unit costs into their component items of cost. In his Figure XX (p. 329) unit item cost curves are shown. All these unit curves have their origin on the *y*-axis at *O*-input. This means, in this instance, that nearly all these curves would need be drawn with a "kink," some upward and some downward, at the 10-man input level if anything like a proper slope is to be attained. Originating unit cost curves at *O*-volume is a common error committed in drawing free-hand cost curves.

⁷ Black, *Production Economics*.

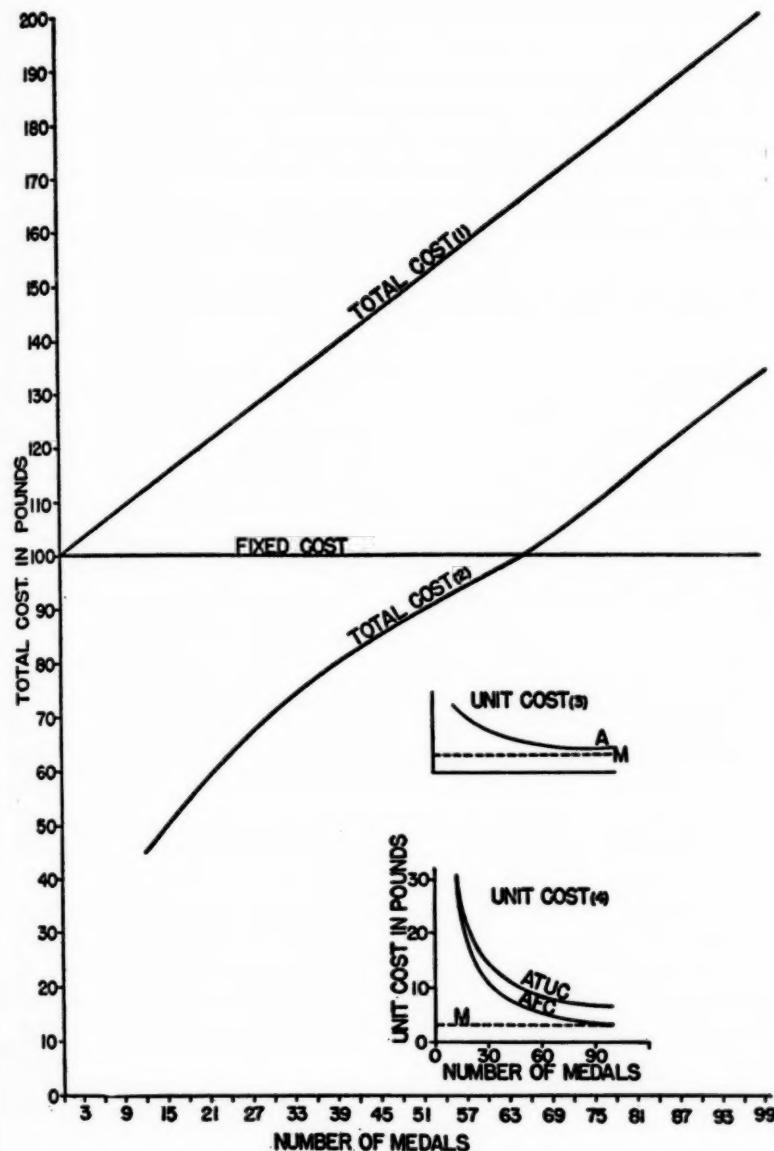


FIG. 8. Cost curves graphed according to table of hypothetical costs and Figure 14 (Robinson, p. 39). Total cost (1), graphed according to costs in table. Total cost (2), graphed according to unit costs in Figure 14. Unit cost (3), reproduction of Figure 14. Unit cost (4) graphed according to table.

One of the peculiarities of Figure XX is the fact that it relates cost to cost—dollar cost to physical cost of labor input. The pertinent relation is between dollar cost and output. Why should there be any relation in a given situation, for instance, between the number of men working and building cost? Relating material cost to labor input is illogical. Material cost is related directly to output and only indirectly to labor input. The logic of the situation is that if labor input is to be featured, it should be related to output and not to the other items of cost. Thus an interpretation of Figure XX is extremely difficult and exceedingly awkward.

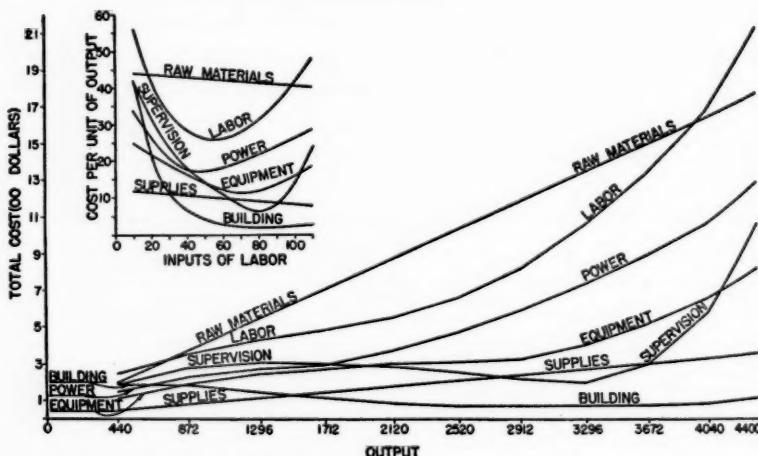


FIG. 9. The total costs represent a transformation of the unit cost curves in Black's Figure XX (p. 329). All the total costs are plotted from the x -axis. Insert. Reproduction of Black's Figure XX.

Readings were made of the item costs in Figure XX at the various labor inputs. Dr. Black states that materials used are about proportional to output. The unit material costs were multiplied by the respective labor inputs and these products by 100 to establish a relative output. In terms of these outputs, total costs were computed for the various items. These total costs are graphed in Figure 9. Each of these total costs is plotted from the x -axis. The insert is a reproduction of Black's Figure XX. The item curves, however, originate at the input of 10 men and not at the input of 0-men.

The errors in the unit curves are many and striking as revealed

in the total curves. Why should building cost, a fixed cost, be \$185 when 10 men are employed and but \$71 when 60 men are employed? The answer is that the unit curve was drawn with "too steep" a slope. Labor receives a relative wage of \$2.46 a day when 10 men are employed and but \$1.09 a day when 60 men are employed. The "dip" in the unit labor cost curve in Figure XX apparently represents an effort to conform with the principle demonstrated in Table XV, p. 324. In this table the relative output per man increases from 2.5 units when 8 men are employed to 5.4 units when 20 men are employed; with an increasing labor force beyond 20 men, however, outputs per man begin to decline reaching 3.5 units when 40 men are employed. But Figure XX is in error in that unit dollar cost of labor is plotted against the number of men employed and not against the output.

To illustrate how items of ginning cost behave, Figure 10 is presented. In this instance, however, items of cost as totals are separated into their constituent fixed and variable components. Furthermore, the total costs are accumulated from the x -axis. The insert shows the items of cost as unit costs. In each instance, unit costs are plotted from the x -axis.

Geometric Marginal Curves

In economic theory of the past 15 years, geometric marginal cost and revenue curves have attained a position of towering significance. The key to profit maximization is the equating of marginal cost to marginal revenue. But the fact that profit maximization is attained at the output for which the two marginal units are equal is not positive proof in itself that the geometric marginal curves are the tools for solving the problem, whether theoretical or practical. There are a number of features about the marginal curves which theorists have either overlooked or misinterpreted.

In discussions of the marginal concept, the point has been repeated that marginal cost and marginal revenue cannot be determined accurately. Joan Robinson makes this startling statement: "In this numerical illustration considerable changes in amount ($1/10, 1/11, 1/12$, etc.) are shown, for the sake of clarity, but such large changes introduce an inaccuracy into the calculation. More precisely, marginal cost is only equal to the increase in total cost, due to an increment of output, divided by the increment of output, if the increment is infinitesimal" (Footnote 2, pp. 26-27). This idea

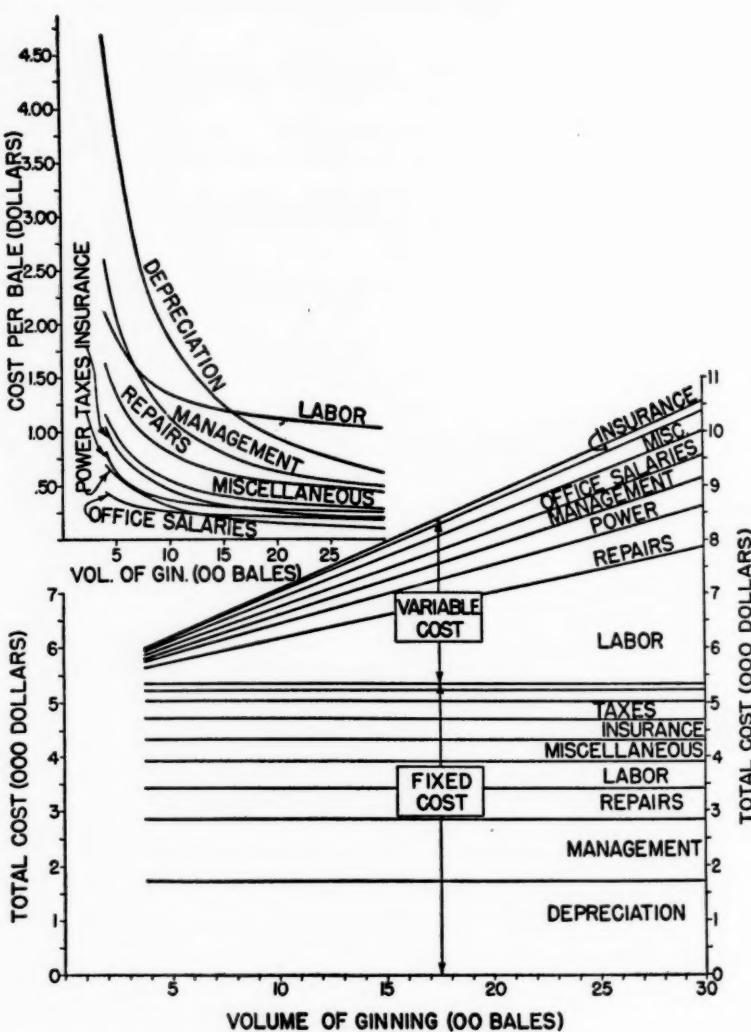


FIG. 10. Items of cost of a \$30,000 Diesel gin of the High and Low Plains Area of Texas. These costs are shown as totals which have been separated into their fixed and variable components. These costs are accumulated from the x-axis. The two unlabeled fixed costs beyond taxes are the fixed costs of power and office salaries. (For the cost equations of these items of cost, see Bulletin 606, Cost and Profit of Ginning Cotton in Texas, p. 100.) Insert. Items of ginning cost as unit curves. In this instance, all unit costs are plotted from the x-axis.

of inevitability of error in marginal cost, or revenue, unless the unit be infinitesimal is both fantastic and preposterous.

If Mrs. Robinson had given thought to the behavior of a total cost curve she could not possibly have made the erroneous statement as quoted above. The rise in the total cost curve from x units of output to $x+1$ units of output is the marginal cost. If this added cost cannot be computed precisely, this situation can obtain only from the fact that total cost cannot be ascertained accurately. From this it follows that total cost curves cannot be graphed accurately. By the same token, total demand curves cannot be graphed free of error. If total costs and total demand cannot be computed with exactness, then assuredly unit costs and unit prices cannot be determined accurately. If there were a grain of truth in Mrs. Robinson's statement, neither graphics nor mathematical computations of cost and demand would be possible free of confusing error.

The clue to the supposed error in marginal cost and marginal revenue is to be found in the geometry of marginal curves (Robinson pp. 26-43). Figure 11 was graphed according to the general pattern of Mrs. Robinson's Figure 4. Figure 11 is presumed to represent average cost and marginal cost. An empiricist feels himself greatly compromised to represent costs in such fashion. The geometry of Mrs. Robinson yields two points determining the location of the marginal curve of a straight-line average curve. The intersection of the unit curve and the y -axis at 0-volume marks one of these points; the mid-point of any line connecting the y -axis at 0-volume and the unit curve but drawn parallel to the x -axis is the second point. The table inserted in Figure 11 gives total costs. By definition, marginal cost is the additional cost in passing from a given output to the next unit of output. Accordingly, marginal costs were determined as recorded. These marginal costs were plotted in Figure 11 as $A'M'$. At each interval of output, these marginal costs are one unit greater than the marginal costs of the geometrical solution. It does not make sense to speak of the marginal cost of the first unit. Only as the second unit is produced can there be an additional cost as between the first and the second units. The straightline marginal curve $A'M'$ continued to the left upward intersects the average curve at 1 unit of output. Thus the two points determining the marginal curve of a negatively sloping straightline average curve are these: a point on the average curve

at 1 unit of output; the mid-point between a volume of 1 unit and the point of intersection with the average curve on a line parallel to the x -axis.

The error in the geometrical solution of the marginal cost curve

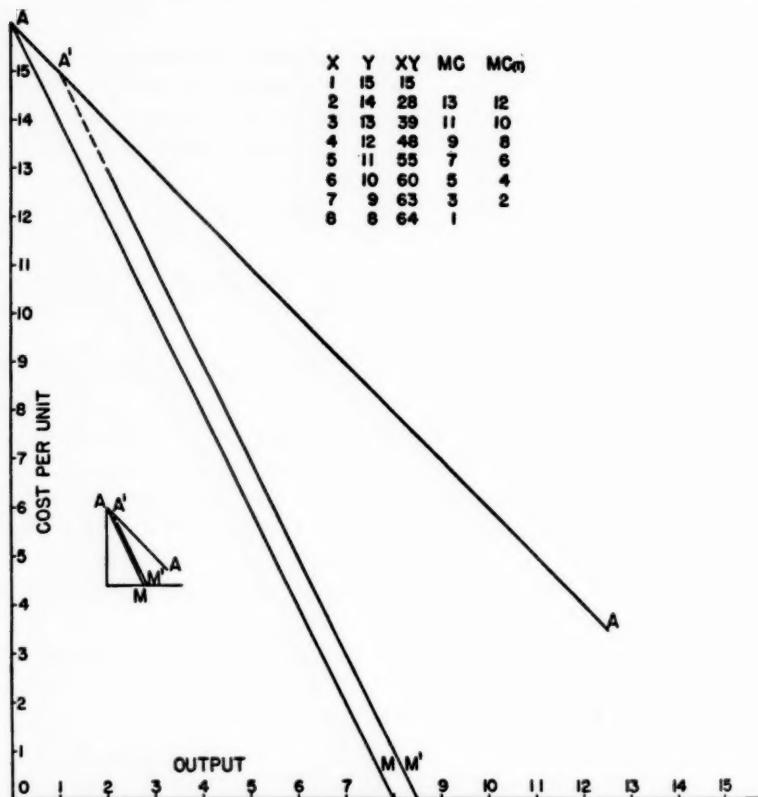


FIG. 11. THE GEOMETRY OF MARGINAL COST. This figure is based on Figure 4 of Mrs. Robinson, p. 30. AA' , average cost; AM , marginal cost according to the geometry of Mrs. Robinson. $A'M'$, marginal cost based on readings of total cost derived from the unit curve AA . The insert shows that the error of the geometry of marginal cost is present when the scaling is reduced to one-tenth of the large figure. Table inserted. MC , marginal costs derived from the total costs XY ; MC_g , marginal costs according to the geometrical solution.

applies in full force to the geometrical solution of the marginal revenue curve. It is interesting to note, in passing, that in spite of the prevalence of error in locating both the marginal cost and the

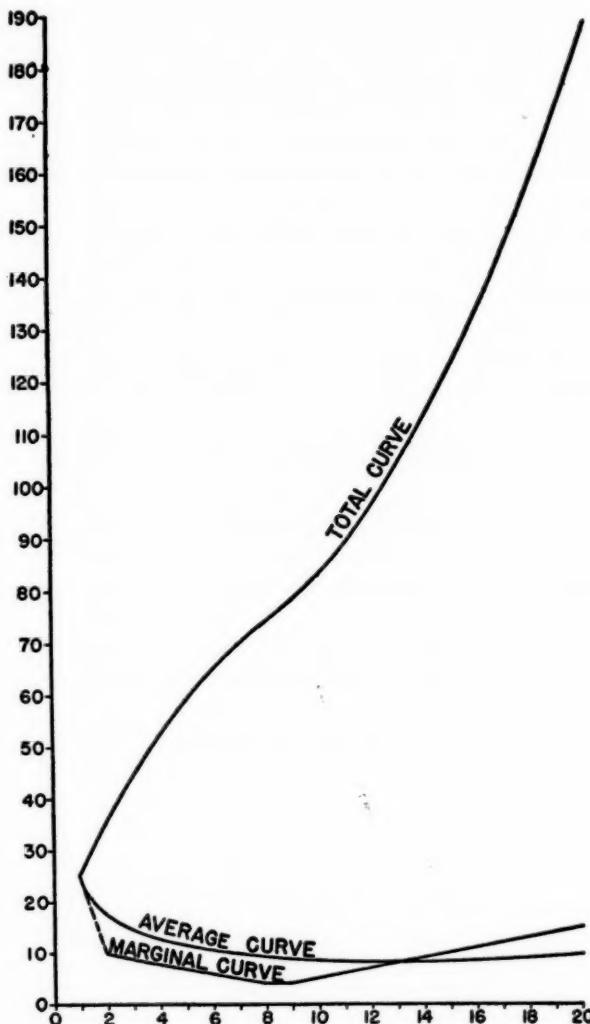


FIG. 12. RELATIONS AMONG TOTAL, AVERAGE, AND MARGINAL CURVES. The marginal curve originates at 2 units. By adding the sum of the first unit to any series of marginal sums, a total results corresponding to the total curve for a like number of units.

marginal revenue curves, theorists obtain "correct" answers in their equating demonstrations.

The question may be raised as to the proper origin of the margi-

nal curve. Should the additional sum in passing from 1 unit to 2 units be marked at 2 units or at 1.5, the mid-point? The answer seems to be given in Figure 12. The total curve is cumulative; the marginal curve is additive. Suppose the additional sum in passing from 1 unit to 2 units be plotted at 2. In adding the first unit to this additional sum a total would result corresponding to the total curve at 2 units. This would hold true for any series of marginal sums, as of 10 units; the 9 marginal sums added to the first unit would give a total corresponding to the total curve at 10 units. If the marginal curve were originated at 1.5 units, then a series of marginal sums added to the first unit would give totals greater than those of the corresponding units in the total curve. It seems that the marginal curve has its origin as an imaginary line at the total of 1 unit and that it has its real origin on the 2 unit axis at a level representing the addition in the total curve in moving from 1 unit to 2 units.

By accepting in full the Robinsonian geometry, Dr. Shepherd falls into error in one of his demonstrations. In Table 18, p. 221, of his *Agricultural Price Analysis*, he illustrates, with a hypothetical case, the relation between average revenue and marginal revenue. Average and marginal curves are graphed in Figure 46, p. 222. Average prices are graphed according to the table. But the average curve is extended so as to intersect the *y*-axis at \$2. The compelling force of the Robinsonian geometry makes imperative originating the marginal revenue curve at this \$2 point. The proper slope is assured by bisecting the base line. Readings on this marginal curve are 10¢ less in each instance than the marginal revenue shown for the same volume in the table. Is it not somewhat incongruous to have one set of marginal revenues in the table and another in the graph? To a thoroughgoing empiricist, a demonstration like this almost defies explanation. Or was it an act of "error" to read the marginal curve?

The Geometry of Demand Elasticity

With a series of 6 figures, A. P. Lerner⁸ demonstrates geometric solutions of demand elasticity. Figure 13 is a reproduction of Lerner's Figures 1 and 2. His Figure 1 illustrates the means of finding the elasticity of a unit revenue curve. Through the aid of the

⁸ Lerner, "The Diagrammatical Representation of Elasticity of Demand." *The Review of Economic Studies* 1: 39-44, October 1933.

marginal revenue curve, the elasticity ratio PT/Pt of Marshall is transformed into the elasticity ratio OA/At of Lerner. The advantage of the latter ratio is that it can be read on the y -axis. That is, if it ever becomes fashionable for the theorists to scale the y -axis.

Attention may now be called to Figure 3, above, showing the

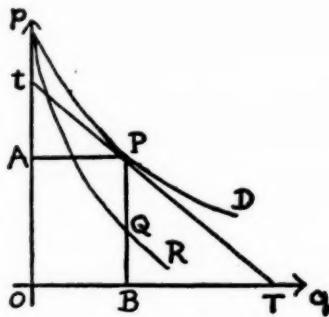


FIGURE 1

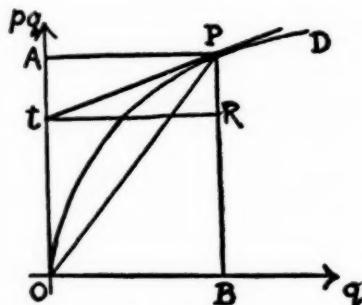


FIGURE 2

FIG. 13. Figures 1 and 2 of Lerner demonstrating diagrammatical solutions for elasticity of demand. (*The Review of Economic Studies* 1: 40.) Figure 1 gives the solution for the unit revenue curve at point P. The elasticity ratio PT/Pt of Marshall becomes the ratio AO/At of Lerner. Figure 2 gives the solution for the total revenue curve at point P. The elasticity ratio is OA/At .

unit and total demand curves for potatoes. The origin of these curves is at a volume of 320,000,000 bushels. The slope of the marginal revenue curve derived from a negatively sloping average revenue curve is twice that of the parent curve. But to locate a geometric straightline marginal revenue curve, one point must be

determined through which it passes. What would be the price of potatoes if but 1 bushel were produced? This, of course, is a foolish question. Only one conclusion can be drawn: the point of origin of the geometric marginal revenue curve for potatoes is positively unascertainable.

The marginal revenue curve intersects the *x*-axis at the volume of that of the high point in the concave total revenue curve. An examination of the total revenue curve in Figure 3 reveals that this high point is also deep in "no man's land." Furthermore, any attempt of the empiricist to invade the territory beyond the actual data is strictly forbidden. "A rather simple, but sometimes neglected, limitation to the interpretation of a statistical cost (demand) function is the fact that it can apply only to the actual range of output. It is probably even more dangerous to project cost (demand) functions to volumes of output that have not been achieved than to project trends into the future."⁹ Surely the theorists cannot invade the forbidden territory to effect a solution. It follows, therefore, that the geometric marginal revenue curve for potatoes cannot be located. The same situation obtains for the geometric marginal revenue curve of any product having a negatively sloping total revenue curve originating at volume greater than that of the high point in the curve.

Difficulties are also in the way in locating the geometric marginal cost curve. What would be the cost to the Ford Company if but one car were manufactured? What would be the cost of producing one typewriter? What would be the cost of ginning one bale of cotton? All these questions are senseless. The point of origin of the geometric marginal cost at the cost of producing 1 unit is positively unascertainable. The other point through which the marginal cost curve passes is the least cost point of the average cost curve. Practically, the difficulty in this solution is that almost universally in such empirical cost studies as have been made the least cost point lies beyond the data. Thus the two points locating the geometric marginal cost curve also lie in forbidden territory beyond the data.

Incidentally, in the constant unit cost and demand curves, the marginal curves coincide with the unit curves. Thus in case constant variable costs become increasing variable costs, the point of de-

⁹ *Cost Behavior and Price Policy*, p. 84.

parture for the marginal cost curve could be definitely located. But this situation offers no consolation to theorists with their bias for curvilinearity. Or in the words of Mrs. Robinson: "He (Sraffa) was concerned to show that economists who make use of the competitive analysis of value have a strong unconscious bias in favour of rising and falling supply price, simply because, if supply price is always constant, their analysis has nothing interesting to say" (p. 118). Does this mean that if the task before the economist be that of describing reality or of making economics interesting, economics must be made interesting?

The figures of the theorists with their unit and geometric marginal curves yielding the solution of entrepreneurs' profit problems are but miniatures of reality. While the realities of cost and demand are in the hundreds, thousands, millions, and hundred of millions of units, the theorists figures are of the 1, 2, 3, . . . 18, 19, 20 routine. Adding zeros, or leaving the axes unscaled in no way changes the fundamental situation. The miniatures of the theorists represent one of the "picturesque" aspects of diagrammatics about which Wicksteed raised his voice in warning many years ago. In low volume curvatures are pronounced and the picture is full of "interest"; in the large volume of reality curvatures are greatly "flattened" and the picture lacks "interest." In a sense, theorists have worked out all the specifications for a bridge to span a 10-foot creek on the assumption that these dimensions may be expanded proportionally for a bridge to span a 2000-foot river. Such procedure is wholly unworkable. It would seem that the geometric marginal cost and revenue curves as the tools for solving the practical problems of profit maximization are doomed to the same oblivion as has engulfed the curves of Auspitz and Lieben.

Attention may now be directed to Lerner's geometric solution of demand elasticity as applied to a total revenue curve. In his Figure 2 he shows that the elasticity ratio may again be transferred to the *y*-axis at *O*-volume. The ratio OA/Ot represents the elasticity at the point *P* on the tangent *tP*. This form of solution may now be applied to the total demand curve for potatoes in Figure 3 above. In this instance, the *y*-axis at *O*-volume would be located to the left at a distance from the 400 million volume 5 times as great as that between 320 and 400 millions. The intercept on this *y*-axis in measuring the elasticity of demand for 360 million bushels would be nearly three times the distance of that between the *x*-axis and

the height of the demand curve at 320 million bushels. A figure drawn according to these specifications would have a rather grotesque appearance in terms of the demand curve for which the elasticity solution was sought. One is reminded of the situation of attempting to adapt the harness of a 2000-pound draft horse to a 400-pound pony.

Computing Marginal Cost for Hypothetical Case

Dr. William H. Nicholls¹⁰ has gone through all the details of creating hypothetical costs for a meat packing plant conforming to the Viner cost curves, except that variable costs decrease and then increase. A fixed cost of 11 million dollars is assumed. Nothing, however, is said about the interval of time in the productive period. Fixed cost without a definite time period is meaningless. Fixed costs are accumulated over a definite time period; unit fixed cost represents a proration of total fixed costs over the output of that time period. The intervals of output are at the rate of 100 million pounds. If this be dressing weight, some 600,000 hogs are represented in each interval; if this be liveweight, nearly 450,000 hogs are included. This volume interval is excessively large.

The assumed additional cost between 100 million and 200 million pounds of output is \$400,000. The marginal cost per cwt. is derived by dividing this additional cost by one million. This can have no other meaning than that the additional costs accumulate at the rate of 40¢ for each additional cwt. of output. According to this computation, the unit variable costs between 100 and 200 million pounds of output, as well as between all other intervals, are constant. In that case, variable and marginal costs coincide. Figure 14 is graphed according to the hypothetical data in Table 28, p. 326. Variable costs are shown as constant costs between the various intervals but at different levels from the *x*-axis. These variable costs, of course, are also the marginal costs. The average curve is the total of the constant variable costs and the relevant section of the unit fixed cost curve. The insert is a reproduction of Nicholls' Figure 41, p. 328. This figure can represent the data in Table 28 under two adjustments: (1) the marginal unit be changed from 100 pounds to 100 million pounds; (2) the cost scale on the *y*-axis be multiplied by one million.

¹⁰ Nicholls, *Imperfect Competition within Agricultural Industries*, pp. 326-328.

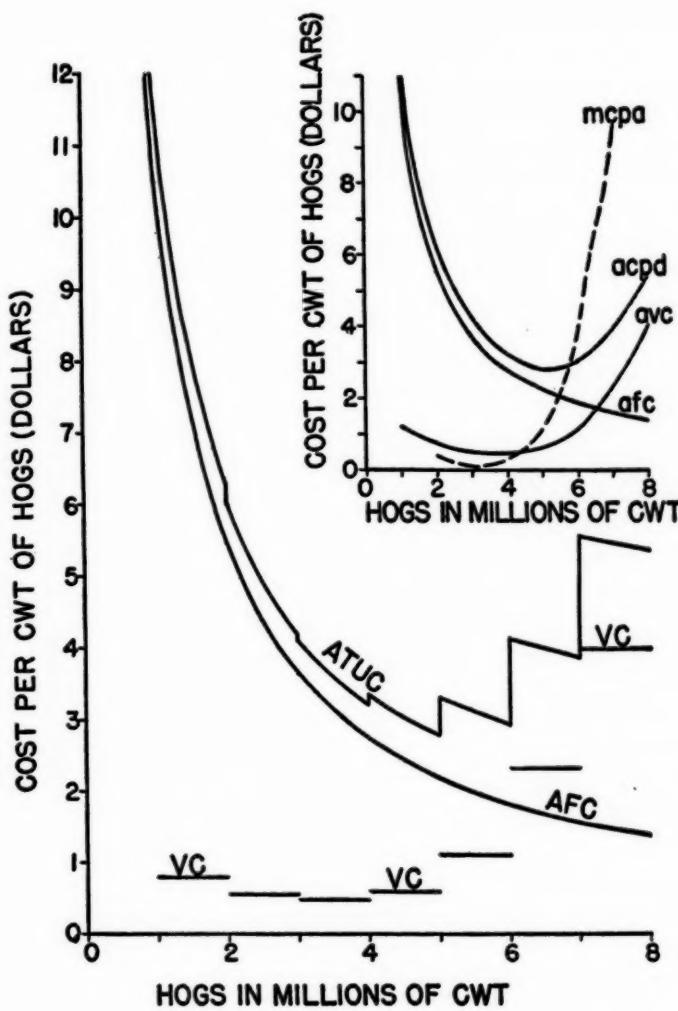


FIG. 14. Unit curves graphed according to hypothetical data in Table 28, p. 26, of Nicholls. *VC*, variable cost (also marginal cost); *AFC*, average fixed cost; *ATUC*, average total unit cost. Insert. Reproduction of Nicholls' Figure 41, p. 328.

Economy of Scale Curve

Accidents occur occasionally in economic theory. One of these is the concept of the economy of scale, or envelope, curve. Whether

scale be continuous or discrete is an issue regarding the economy of scale curve. In *Cost Behavior and Price Policy*, the matter is stated thus: "Some theoretical analysis implies that size of plant is a continuous series, whereas actually the series is discrete. Plants do not and cannot form a smooth gradation with respect to size, differing from one another by small and uniform amounts. Instead they form a discrete array with large and irregular differences in size. For this reason the empirical relationship differs inherently from the theoretical continuous curve" (pp. 235-236). Does it make sense to assume a continuous series in theory, a situation that does not obtain in reality?

The technique adopted by theorists in graphing the envelope curve is obvious. The envelope curve is drawn first. Then the short-run curves are fitted to it. This seems to be a case of diagrammatics making the theory. Because this type of diagram can be graphed, then not only must theory conform but also reality!

In all diagrams of the economy of scale curve, the points of tangency and the points of least cost differ. According to theory the point of tangency marks the most economical volume of output for that particular scale. The discrepancy between the point of tangency and the point of least cost does not make the slightest dent in the theory. "Note that the minimum cost as indicated by the economy curve is lower than the least-cost points on the plant curves when the economy curve is negatively inclined. This means that, with competitive conditions but a small market, the most economical plant will be one that is operating at less than its least-cost volume."¹¹ In one of these diagrams, relative volume increased by 55 percent from the point of tangency to the point of least cost; relative cost increased by 35 percent. How can theory maintain itself in the presence of error revealed by plain arithmetic a school child can readily understand?

In *Cost Behavior and Price Policy*, this admission is made: "The empirical study of costs in existing plants does not permit a close approximation to the long run cost curve of economic theory" (p. 262). Bressler in his study of operating costs of country milk plants, synthesized six plants as ideally adjusted as possible to operate at their respective full capacities during the peak volume of June. His economy of scale curve, however, connects the points

¹¹ Bressler, *Economies of Scale in the Operation of Country Milk Plants*, p. 21.

of cost of average volume for the season which is from 70 to 75 percent of the peak volume. Points of tangency, points of least cost, and curves of increasing cost do not appear in the graph (pp. 59-64).

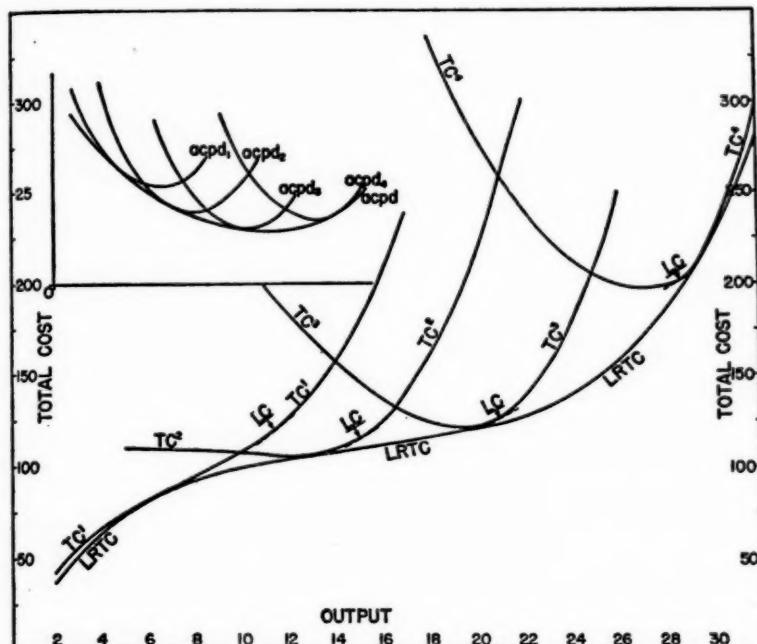


FIG. 15. Economy of scale and short-run cost curves shown as total curves. This figure is based on Figure 42, p. 329, of Nicholls. $LRTC$, long-run total costs, or economy of scale curve; $TC^1 \dots TC^4$, total short-run cost curves; LC , least cost points. Insert. Reproduction of Figure 42 of Nicholls.

Nicholls presents an economy of scale curve (Figure 42, p. 329). The x - and y -axis were scaled and readings made on all unit curves. The unit curves were converted to total cost curves; these total cost curves are shown in Figure 15. It is manifest that the unit curves of all scales except the lowest violate the law of cost. It should also be evident that the task of graphing a unit economy of scale curve with correctly sloping unit short-run curves is much more exacting than ever imagined by the theorists.

*Diagrammatics of Maximum Profits under
Decreasing and Increasing Costs*

Dr. Albert L. Meyers¹² uses two figures (Diagram 1, p. 256 and Diagram 2, p. 258) to illustrate profit maximization of a firm under monopolistic competition, the one under decreasing costs and the other under increasing costs. But his cost curve *ATUC* is totally different from the usual average cost curve. "In Diagram 1, *ATUC* represents average total unit costs on a planning curve." (pp. 255-256). The planning curve is a modification of the economy of scale curve. In the case of the planning curve, production in the lowest scale of plant is visualized to continue to the least cost point and beyond until the curve intersects the short-run curve of the second scale plant. At this point of intersection costs are increasing in the lower scale of plant and decreasing in the second scale plant. Consequently, it is advantageous for the producer who contemplates to increase his output to shift to the second scale of plant. Volume is then increased with the short-run curve decreasing and then increasing until it intersects the cost curve of the third scale plant. If output is still to be increased, it becomes advantageous to shift to the third scale plants. These shifts can be made advantageously until the scale of plant is reached having the minimum unit cost. The relevant parts of the short-run curves in the planning curve would present a scalloped appearance. Each segment would have its own cost equation.

Meyers' planning curve, however, is smooth. This means that adjustments have been made to eliminate the scallop. He does not say whether *ATUC* was drawn through the points of intersection of the short-run curves; or whether *ATUC* was drawn tangent to the short-run curves; or whether *ATUC* was drawn within these two limits. In any event, only points on *ATUC* are relevant. In the first instance there is one point less than the number of short-run curves; in the second instance, the same number; and in the third instance, there are two points for each short-run curve. It follows that *ATUC* is not a real curve. A cost function cannot be ascribed to points.

According to Meyers this is the way the sensible entrepreneur acts in starting a new business. The specifications are drawn up for a large number of plants of increasing scale. Computations are made

¹² Meyers, *Modern Economics*.

as to the costs per unit for varying outputs in these plants. The short-run cost curves are graphed. This yields the planning curve. This curve indicates the scale of plant with the lowest cost per unit. By some strange miracle, the output of this most efficient plant finds a demand which yields maximum profits. If the output be a food product, this is as though the housewives stand ready with market baskets in hand to buy the total output at a favorable price to the producer. Apparently the right start on the part of the business man assures prosperity ever after. Again the statement may be ventured that economic optimism did not die with Bastiat and Carey. The optimism of Meyers, however, is "too much of too much."

But there is one discordant note. The business man may be satisfied in operating at a profit instead of at a maximum profit. As a consequence he may stop short of the scale of plant with the lowest costs. "There is always the possibility, however, that through ignorance the monopolist will discontinue these experiments and stop short of the point of maximum returns, being satisfied so long as he is operating at a profit. Under these circumstances, both the monopolist and the general public would be the loser: the monopolist because he would be making less than the greatest possible profit; and the public, because it would obtain fewer goods at higher prices than it could, had the monopolist been awake to his own self-interest. On the other hand, if his price is set low through ignorance, the public gains at the expense of the monopolist" (p. 260). Meyers turns Shakespeare into an economist. "Ignorance is the curse of God; wisdom is the wing wherewith we fly to Heaven."

Figure 16 is presented to demonstrate that the much publicized precision of the intersecting marginal cost and marginal revenue curves adds unnecessary complications. This, of course, involves two concessions: 1. that the *ATUC* curves of Diagrams 1 and 2 are real; 2. that the marginal cost and marginal revenue curves can be located. The solution of maximum profits is more direct and much simpler through the use of total cost and total revenue curves. The slopes of the total curves represent the marginal cost and the marginal revenue. The volume at which the two total curves are the greatest vertical distance apart is the volume of greatest profit. Tangents to the points of this volume on the two curves are parallel. This means that marginal cost and marginal revenue are equal. Furthermore, the total curves picture vividly profits at volumes

less than and greater than maximum. In actual cases the precision of "marginal cost=marginal revenue" may not be nearly as important as indicated in theoretical discussions of the intersecting marginal curves.

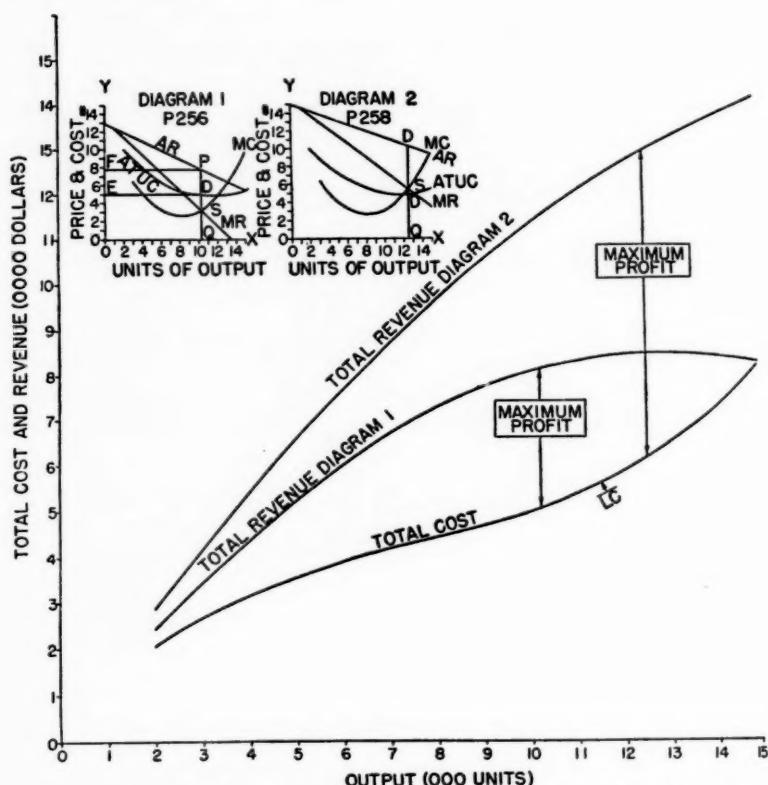


FIG. 16. Determining the volume of maximum profits through the use of total cost and total revenue curves. Maximum profits obtain at the volume at which the total curves are at a maximum vertical distance apart. Inserts. Reproduction of Diagrams 1 and 2 of Meyers. The marginal revenue curves, however, were relocated. *ATUC*, average total unit cost; *MC* marginal cost; *AR*, average revenue; *MR*, marginal revenue.

Diagrammatics of Monopolistic Competition

Figure 14, p. 91, is basic in Chamberlin's¹³ *Theory of Monopolistic Competition* as related to large numbers of firms. He assumes that the elasticity of demand of the subjective curves (the *dd*'s) remains

¹³ Chamberlin, *The Theory of Monopolistic Competition*.

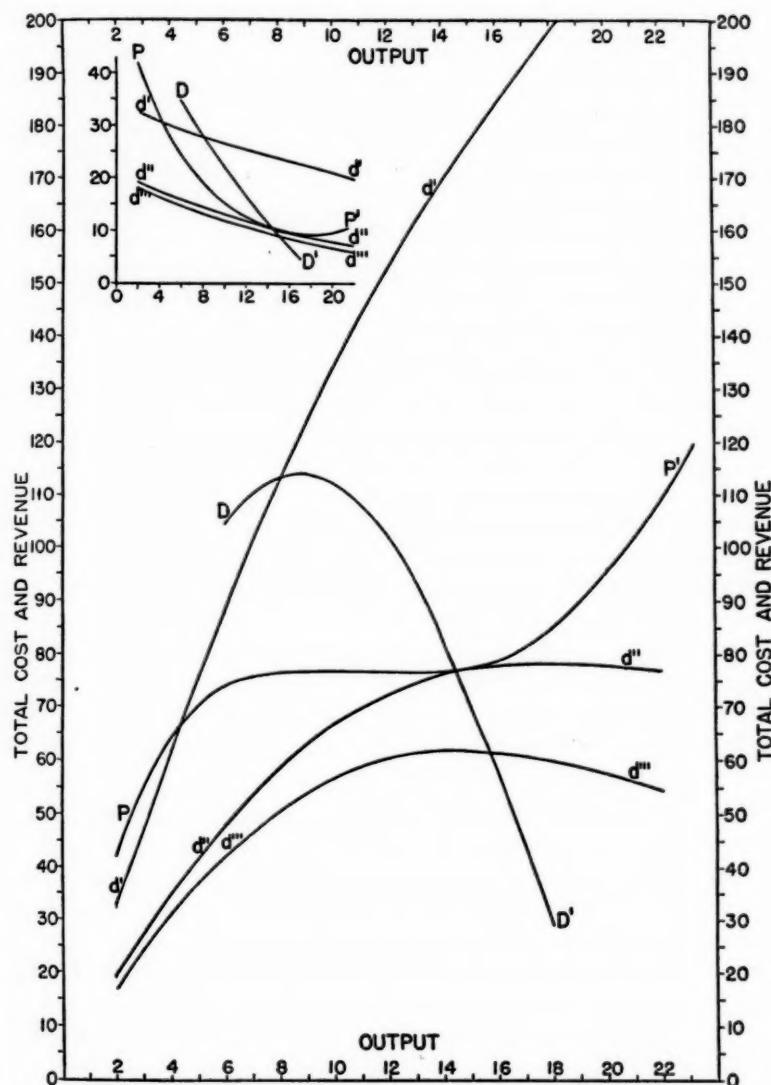


FIG. 17. Diagrammatics of monopolistic competition among large numbers of firms according to Chamberlin. PP' , total cost; DD' , total demand of individual firm; $d'd'$, $d''d''$, and $d'''d'''$, total subjective demand curves of the individual firm. Insert. Reproduction of Figure 14, p. 91, of Chamberlin; the $d'''d'''$ curve was added from Figure 15.

constant regardless of the unit price intersected on the DD' curve. "Its elasticity may, however, without sensible error, be taken as the same regardless of position, since it expresses the preference of buyers for the 'product' of one seller over that of the others. There seems to be no especial reason why this should be stronger at higher than at lower prices, or vice versa" (Note 1, p. 90). Triffin¹⁴ is disturbed over this assumption of "same elasticity." He observes that the subjective curves are parallel but he seems at a loss to prove, or to disprove, the equal elasticity assumption. This situation demonstrates vividly the difficulties which may arise in attempts to interpret unit curves; and the errors which may be entertained when the basic fact is overlooked that unit revenue is but a rate one dimension of a two-dimensional concept.

In Figure 17 the unit curves of Chamberlin's Figure 14 are graphed as total curves. The lower subjective curve of Chamberlin's Figure 15 was added. The elasticity of a point on a total demand curve is pictured by the slope of the tangent at that point. The slopes of the tangents at points of like volume on the three subjective demand curves differ widely. Manifestly, the assumption of equal elasticity of the unit demand curves $d'd'$, $d''d''$, and $d'''d'''$ is grossly in error.

Triffin (p. 26) quoting Chamberlin, describes the DD' demand curve in these words: " DD' 'shows the demand for the product of any one seller at various prices on the assumption that his competitors' prices are always identical with his. . . .'" There is error in this interpretation because the unit price is not correctly viewed as a rate. Under the symmetrical assumptions of Chamberlin, production from that satisfying demand at the origin of the DD' curve to that of the intersection of the curves PP' and DD' increases by 140 percent. This illustrates one of the penalties attached to miniature diagrammatics. With but a low value of x , even a moderately sloping demand curve results in a distorted increase in volume. The volume of potato production from low to high as pictured in Figure 3 increased by but 25 percent. Presumably the demand curve DD' represents the sloping demand of monopolistic competition. Assuredly, it also represents decreasing elasticity of demand as the total volume of output increases. How much of the slope is due to product differentiation and how much to increasing volume, deductive reasoning is powerless to disentangle.

¹⁴ Triffin, *Monopolistic Competition and General Equilibrium Theory*, pp. 64-65.

The usual contrast between the horizontal unit revenue curve of pure competition and the sloping unit revenue curve of monopolistic competition does not compare like situations. The demand curve for potatoes is also sloping in picturing shifts in demand according to changes in supply from year to year. How otherwise could elasticity of demand be measured? For a given season, however, sales by farmers are according to a horizontal curve. Likewise, the DD' curve of Chamberlin reflects demand for varying quantities. A given point on DD' represents average price on the total supply. In terms of the total supply the sales curve is horizontal. What else can an average price mean?

It would seem that theorists of monopolistic competition have failed so far to give a clear picture of demand behavior. Is it not a matter of common observation that products sold under conditions of monopolistic competition have far more stable prices than have products sold under conditions of pure competition? All that is needed to support this point is to contrast prices of such farm products as wheat, corn, cotton, and potatoes with prices of such products as breakfast foods, candy bars, soft drinks, and cosmetics. Product differentiation is important in monopolistic competition; quite as important, if not much more so, is the power to control output.

The unit cost curve PP' in Chamberlin's Figure 14 appears unexciting. What a revelation it is to see it in the total! In its early course, the curve is "too flat;" then it becomes "too steep." The horizontal portion of the total cost curve pictures a peculiar situation of total variable costs as well as total fixed costs being constant. Such a circumstance is possible but not probable.

Legitimacy of Theoretical Curves

The stress thus far in this paper has been on such matters as: graphing of theoretical unit cost curves so as to conform with the law of cost; problems of locating marginal cost and marginal revenue curves; solving the problem of maximum profits through the use of total cost and total revenue curves; and the manner of deriving the elasticity of demand of unit demand curves by transforming such curves into total revenue curves. The issue may now be raised whether or not theoretical curves be legitimate. There can be no question but that curves may be properly used to illustrate the bell shape of normal distribution; the concepts of decreasing

and increasing costs; and the like. But when curves of unit cost and unit demand are drawn free-hand to demonstrate the profit solution of a firm, this is a matter of a completely different complexion. Such theoretical curves are in the same category as hypothetical cost and demand data. Both are open confessions that data are lacking.

Cunynghame faced the question of the legitimacy of the theoretical curve; he gave a most unsatisfactory answer. After describing the barometric graph he made this statement: "Thus, then, mathematically, it is the same thing to draw a curve with its 'axes' OX and OY as it is to write the equation $y=f(x)$, provided only the true nature of f , the function, be known. Whenever we do not know f we cannot predict the course of the curve. Hence, then, in Political Economy, which deals with market fluctuations, it is generally better to use the geometric method, which exhibits instantly to the eye the most irregular variations, than to deal in generalities about f and its properties" (pp 35-36). Cunynghame virtually stated that the mathematical equation in its general form may not be graphed because of lack of empirical data from which to establish the value of f ; he also stated that the geometric curve may be graphed without data. This enigma posed by Cunynghame concerning who may, and who may not graph curves, focuses attention on the yawning abyss separating mathematical economics from diagrammatic economics; but even so, each in turn is being accepted as an aid to literary economics.

THE WARTIME USE OF MANPOWER ON FARMS

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THE maintenance of an adequate supply of farm labor in commercial agriculture was a critical problem throughout the entire war and early postwar period.* Agricultural workers in 1940 made up 16 percent of the national labor force. They numbered 10,585,000 of which 8,019,000 were family workers and 2,566,000 were hired workers. For the last 35 years around one-fourth of the farm labor supply has come from hired workers with farm operators and other members of the family furnishing the other three-fourths.

Enlistments in the military services, selective service calls and the attraction of high wages in the war industries, all contributed to excessive drains on the farm labor supply. The movement of farm workers to nonfarm jobs in part was desirable, for there was much underemployment in agriculture at the outbreak of the war. Underemployment was found on the smaller and less productive farms throughout the United States but was especially widespread in the South. The wartime demands for labor were far too great, however, to be satisfied by removing the slack in urban unemployment and underemployment on farms. When this slack was taken up in 1942 farm wage rates and working conditions were at such a competitive disadvantage that farm leaders became alarmed about keeping enough labor to make the 1943 plantings and complete the harvest. In the fall of 1942 and the first half of 1943, when commercial agriculture abruptly shifted from a labor surplus to a labor deficit industry, uncertainty and political discussion of legislation in the field of farm labor reached its height. Most of the basic wartime labor policies were developed in those months.

Extensive Agricultural Deferments Required

The first selective service act to provide men for the military services in World War II was signed September 16, 1940, over a year before we became directly involved in the war. Males 21 to 36 years of age were required to register and from this registration a defense force was to be recruited, each recruit to serve a period

* This paper is part of a general study of the influence of the war on American agriculture. Although the writer has obtained assistance from the Bureau of Agricultural Economics in making the study, the conclusions and opinions expressed here are the author's and may not represent the official viewpoint of the Bureau of Agricultural Economics or of the agencies discussed.

of 12 months in the Army. In August of 1941 this law was amended to exempt men over 27 from military service and to extend the period of service up to 18 months. Immediately after Pearl Harbor, however, all males 36 to 45 years of age were registered and men up to 45 years of age were taken into the military services. But the armed services took relatively few in 1941 and it was not until we were actually engaged in the war that the draft created serious problems.

From the beginning of the draft agriculture was recognized as an industry in which workers might be granted deferment, but it was November 1942 before agriculture was recognized as an industry requiring special consideration.¹ In the late summer and early fall farm labor shortages became so acute that many congressmen and congressional committees became interested in the problem. Senator Downey of California introduced a resolution which was passed, providing for a special committee of three senators to make a study of the existing shortage of farm labor in western United States and make recommendations for dealing with it.² In October Governor Stassen of Minnesota presented an 11-point emergency program to ease the Minnesota farm labor shortage and 15 United States senators urged a 90-day deferment of essential agricultural laborers.³ The Secretary of Agriculture asked for a deferment of all farm workers and O'Neal, the President of the American Farm Bureau Federation, charged that farm workers were not receiving equal consideration with industrial workers from draft boards.⁴

The War Manpower Commission responded to this increasing pressure in late October with a plan for stabilizing workers on dairy, livestock and poultry farms. The Director of Selective Service instructed the local draft boards to immediately reclassify in III-B all such workers deferred for dependency and "give serious

¹ A memorandum from Selective Service Headquarters to local boards on December 4, 1941 stated "In considering whether agricultural workers were to be deferred, the same grounds were to be used as in the case of industrial workers, namely:

(a) He is, or but for a seasonal or temporary interruption would be, engaged in such activity.

(b) He cannot be replaced satisfactorily because of a shortage of persons with his qualifications or skill in such activity."

The memorandum also went into further detail regarding the conditions local boards should take into account in granting agricultural deferments. Selective Service in Wartime, Second Report of Director of Selective Service, 1941-42, p. 188.

² *Ibid.*, p. 197.

³ *New York Times*, Oct. 10, 1942.

⁴ *Ibid.*, Nov. 6 and Nov. 12, 1942.

consideration to occupational classification for all such farm workers and producers not deferred by reason of dependency but whom they consider essential to the continued production of dairy, livestock and poultry farm products. . . . All workers skilled in dairy, livestock or poultry farm operations who are not found to be eligible for deferred classification in their present employment shall be referred to the United States Employment Service . . . for placement in other such farms where their skill may be employed."⁵ At the same time the Army and Navy adopted a policy of not recruiting or accepting for voluntary enlistment any man without a certification from his local board that he was not an essential farm worker.

As a guide for the local boards in determining the essentiality of farm workers, the United States Department of Agriculture prepared a list of war units or work requirement standards. Each class of livestock and crop was given a conversion factor based on the work required in its production. Thus the care of 1 milk cow was considered one war unit of farm work. Since approximately 3 beef cows or 5 yearling steers or heifers could be cared for in the time taken for 1 milk cow—3 beef cows or 5 yearlings were required for 1 war unit. When all the livestock and crops were thus converted into war units it was a simple matter to determine whether or not a worker was making an important contribution to farm production. At this time (October 1942 to February 1943), a worker to be deferred had to be responsible for the production of only 8 war units. This minimum was changed to 10 in February 1943, to 12 in May 1943, and later to 16 units.

Tydings Amendment Stabilizes Farm Labor

The War Manpower Commission's plan for stabilizing farm workers had not been in operation long enough to test its effectiveness when a bill to lower the draft age from 21 to 18 was under consideration in the Senate (October and November 1942). This provided a convenient opportunity for additional legislative standards for the deferment of agricultural workers. Senator Tydings of Maryland and others added a section to this bill which provided that a worker found "to be necessary to and regularly engaged in an agricultural occupation or endeavor essential to the war effort, shall be deferred . . . so long as he remains so engaged and until

⁵ Selective Service in Wartime, *op. cit.*, p. 198.

such time as a satisfactory replacement can be obtained: provided, That should any such person leave such occupation . . . his local board . . . shall reclassify such registrant in a class immediately available for military service. . . ."⁶ The final clause of the section gives the local board permission to continue the registrant in a deferred classification even though he leaves the farm if in their judgment it is in the best interests of the war effort.

This so-called "Tydings Amendment" became the basic principle for farm deferments by Selective Service agencies after November 1942. Statutory exemption of certain public officials, ministers, and theological students is called for by the law; but, whereas the deferment of persons in all other occupations is discretionary, that of agricultural workers was made statutory by this act. No other occupation has received such consideration from Congress. In the early months 16 war units per worker were suggested as the minimum amount of work required for a deferred classification. The administration of this phase of Selective Service varied from County to County and State to State, but in general it tended to keep essential workers available for agriculture and increased the work accomplished by those remaining on farms, since the administrative regulations permitted local boards to defer men on farms where insufficient units were produced but where in a reasonable period of time additional units would be added. Boys on farms with their fathers where the war unit load was less than 16 often were required by the local draft boards to work part time on other farms. In this way many of the boys deferred helped several different farmers with their peak load labor requirements.

The 16 war unit standard was relatively high for farms in the South, however, and Senator Bankhead and other farm state senators succeeded in getting this lowered in January. The new directive to the local draft boards specified 16 units as an objective rather than a requirement and the boards were permitted to defer workers with as little as 8 units, particularly if they were making diligent efforts to increase their production of essential products.⁷ By mid-summer, 1943 around 1,800,000 men were deferred for agriculture. Throughout the war the classification of men deferred for agricul-

⁶ *Op. cit.*, p. 204.

⁷ New York Times, Jan. 16, 1943. In most states, however, the 16 war unit minimum was exceeded. In Wisconsin, for example, the average war units per farm worker in 1945 were 23, varying from a low of 16.2 units in one county to a high of 29 per worker in another county. Early in 1945, the war unit system was officially discontinued by Selective Service and local boards thereafter appraised farm cases according to the judgment of its members.

tural work continued between 1,500,000 and 1,750,000 men. Without these men it would have been impossible to produce and harvest the record volume of output achieved. While they accounted for 12 to 15 percent of the numbers working on farms, because they were young and able bodied these deferred men contributed a far higher percentage of the total work output. The number deferred June 1, 1944 as a percentage of the total farm working force and per 1000 acres of crops in each geographic area is as follows:

	Agricultural deferments as percent of number em- ployed on farms, June 1, 1944	Agricultural deferments per 1000 acres of crops
New England States	12.4	9.0
Middle Atlantic States	18.0	8.1
East North Central States	19.1	4.7
West North Central States	22.0	2.8
South Atlantic States	11.3	9.4
East South Central States	10.7	8.2
West South Central States	11.5	4.2
Mountain States	15.1	3.2
Pacific States	12.5	5.7
United States	14.5	4.7

It is apparent that deferments were greatest in the Middle Atlantic, East North Central and West North Central States where feed and livestock production are greatest. Although at least 10 percent of the farm workers were deferred men of military age in each geographic area, deferments were lowest in the East South Central and South Atlantic States where underemployment on farms at the outbreak of the war was greatest.

It is difficult to find a satisfactory basis for comparing the deferments for agricultural work and other occupational deferments. Throughout 1943 and from then until the end of the war there was serious competition between the manpower demands of the military services and the requirements for war industries as well as for agriculture. By July 1, 1944, however, the Armed Forces reached a net strength of 11,612,000 with 16 percent of the employed civilian males deferred for work in essential industries; over 4 million deferred in occupations other than agriculture and 1,641,000 deferred in agriculture.⁸ If these deferments are expressed as a percentage

⁸ Colonel Keesling testifying before the Committee on Military Affairs of the House of Representatives, Jan. 18, 1945 reported 1,500,000 classified in II-C (deferred for agriculture) and 4,250,000 in II-A and II-B (deferred for occupations other than agriculture). Other testimony before the committee brought out the fact that 400,000 of these deferred in agriculture were between the ages of 18 and 25 while almost none of those in II-A and II-B were under 25 years of age.

of the males 15 to 35 years of age in 1940 (the last prewar census), the farm deferments appear only moderately higher than the non-farm deferments. Farm deferments are about twice non-farm deferments, however, if the numbers are expressed as a percentage of employed civilians. The data are as follows:⁹

	Males 15 to 35 years of age, 1940	Percent	Deferments July 1, 1944	Percent of number, 1940	Percent of employed civilians
Farm	5,209,178	23	1,641,000	32	17
Non-farm	17,184,341	77	4,105,000	24	9
Total	22,393,519	100	5,746,000	26	10

Tydings Amendment Stopped Cityward Migration

Within a short time after the passage of the Tydings Amendment most of the local draft boards reclassified their registrants and notified those deferred for agricultural work. In their notification they informed those deferred that if they left agriculture or shifted to a farm where they were responsible for fewer war units of work they would be subject to reclassification. The cityward drift of farm boys of draft age dropped sharply. In fact administrative rulings permitted the deferment of farm boys who returned from city jobs and a number of such deferments were granted in 1943.

The local draft boards in most cases reviewed all agricultural deferments carefully and in general refused applications of individuals to shift to nonagricultural employment. They did, however, grant seasonal releases for winter work in the logging, livestock packing plants, and similar industries.

Congress Assigns Farm Labor Program to Extension

In the early months of the war the Secretary of Agriculture assigned most of the activities relating to farm labor to the Farm Security Administration. In June 1942 the Secretary himself started negotiations on a contract with the Mexican government for the importation of Mexican workers under the supervision and administration of the Farm Security Administration. They also organized recruitment and training programs for farm boys in the areas of widespread underemployment, for placement on livestock farms in the labor deficit areas. In carrying out these programs the Farm Security Administration issued a leaflet entitled "Statement

⁹ Computed from data in Census, 2nd Annual Report of Selective Service and Census estimates of employment July, 1944. (Census estimates of farm employment are somewhat lower than the similar series published by the Department of Agriculture and the percentage deferred correspondingly higher.)

of Policy for Recruitment and Employment of Agricultural Workers in the United States" which aroused the antagonism of Congressmen.¹⁰ F.S.A. undertook, as a part of its responsibility to recruit workers, to assure certain standards with respect to wages, working conditions and period of employment. Employers objected to "government men" concerning themselves with issues which previously had been left to the discretion of the employer. The Farm Security Administration already had a reputation as a "social reform" agency and employers and congressmen from farm states feared that it was going to use the war period to further F.S.A. ideas of social reform in the farm labor field.

The contract with the Mexican government for the importation of labor, under which 5,894 agricultural laborers were imported to California and Arizona in the fall of 1942, was criticized as containing higher standards for the Mexican workers than those maintained by their own government. Southern congressmen also feared that the Farm Security Administration would undertake a large scale program to move farm workers out of the South. Congressman Tarver when interviewing Administrator Baldwin said:

"I certainly hope that you will not share in this program if you are going to undertake to bring about the migration by persuasion and by paying money to them also, paying expenses, of farm families of the South who are satisfied with their surroundings . . . to other sections of the country . . . the agricultural resources of the South offer more hope to the country in the way of increasing agricultural products than do the resources of any other section of the country . . . and instead of devoting your efforts to the development of agriculture in the South . . . you are going out after this fly-by-night program of trying to move some hundreds of thousands, if not millions of farmers and their families out of the South to other sections of the country. . . ."

"I think that the theory is absolutely untenable, impractical, unfair and foolish, and I certainly hope that no men who entertain it will ever continue in a position in the Government through which they may be enabled to foster and promulgate such ideas."¹¹

¹⁰ See Congressman Dirksen's statements to Secretary Wickard and Tarver's questions and statements when Wickard and Baldwin appeared before the Subcommittee of the Committee on Appropriations, House of Representatives, 78th Congress, Hearings on the Agricultural Appropriation Bill for 1944, pp. 26-28 and 988-1008.

¹¹ *Ibid.*, pp. 1006-8, March 4, 1943. For an evaluation of this extreme position see Black, John D., *Food Enough*, the Jacques Cattell Press, 1943, pp. 87-90.

It was apparent that farm leaders and congressmen would not be satisfied as long as the recruitment and placement of farm labor was administered by the Farm Security Administration.¹² In order to meet congressional criticism and to deal more effectively with the increasing number of problems in the farm labor field the Secretary of Agriculture on March 1, 1943 created an Agricultural Labor Administration within the Department.¹³ This new agency was given responsibility for the development and direction of all phases of its farm labor program. It took over such work previously carried on by the F.S.A., the Extension Service, the Food Distribution Administration and the Food Production Administration. Wayne Darrow, a former member of the Texas Agricultural Extension Service and of the Information Section of A.A.A., was named administrator of the new agency in an attempt to regain congressional support. The creation of this new agency took place while the House was considering a request of the Department of Agriculture for a deficiency appropriation of \$65,075,000 to cover the additional expenses of a war labor program until the end of December 1943.

While considering this request for funds, members of the Department of Agriculture, the farm organizations and the State Extension Services were interviewed regarding past farm labor recruitment activities and desirable future plans. Albert S. Goss, Master of the National Grange, presented a joint statement concurred in by the Grange, the Farm Bureau and the National Council of Farmer Cooperatives a few months earlier which read in part as follows:

"We are greatly concerned over what we consider the misdirected efforts of agencies of Government to fasten upon farmers and farm workers far-reaching bureaucratic controls and restrictions. Under the guise of the war effort, a social revolution is being perpetrated upon the American people. We are convinced that unless these policies are immediately abandoned, we face within the foreseeable future a disastrous shortage of food for our armed forces, our civilian population and our allies. Already serious loss of food and fiber has resulted from the present administration of farm labor and price-control policies. . . .

"Attempts to superimpose impossible so-called social reforms on farmers and farm workers have seriously interfered with all efforts

¹² The National Farmers Union, other organizations and Congressmen who had supported the Farm Security Administration on other issues supported the F.S.A. farm labor activities.

¹³ Secretary's Memorandum 1075, March 1, 1943.

to meet the increasingly desperate farm labor shortage. Plans to bring needed workers from Mexico were loaded down with so many impractical requirements that so far farmers have obtained but little real help from this source."¹⁴ Representatives of the other farm organizations as well as the members of the Subcommittee were critical of the past activities as well as of the future plans for dealing with farm labor of the Department of Agriculture.

The Farm Bureau had already experienced some difficulty with regional and state officials of the Agricultural Adjustment Agency in the Midwest because of their opposition to the Farm Bureau's position against appropriating \$100,000,000 for incentive payments in meeting 1943 farm production goals.¹⁵ The Agricultural Extension Service, a cooperative federal and state educational organization, was the only other agency having representatives in every county in the United States. General agreement was soon reached that the farm labor recruitment and placement program should be placed in their hands.

The Executive Committee of the Land Grant Colleges and Universities on March 6 issued a memorandum stating that they did not seek "the responsibility for supervising the farm labor program but if it is the will of Congress, the Extension Service should undertake such a program."¹⁶ Several directors of State Extension Service appeared before the Subcommittee and indicated that, with adequate finances, they could handle the job. On the basis of these hearings a joint resolution was passed the last of April (Public Law 45, 78th Congress, 1st Session) appropriating \$26,100,000 for the farm labor program for the balance of the calendar year. The farm labor placement functions of the United States Employment Service had already been transferred to the Department of Agriculture by War Manpower Commissioner, Paul V. McNutt.¹⁷ The War

¹⁴ Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 78th Congress, 1st Session, Appropriation for the Farm Labor Program, Calendar year 1943, p. 88.

¹⁵ Congressman Cannon of Missouri introduced correspondence in the hearings before the House Subcommittee on Appropriations, March 9, 1943 indicating that Regional, District and County A.A.A. employees in Missouri and Indiana were attempting to get farmers to put pressure on Congress to approve incentive payments. The evidence included such statements as: "Plainly Ed O'Neal, of the American Farm Bureau Federation, and the Extension Service are trying to throw the A.A.A. out the window" and ". . . the Farm Bureau wishes to place the Agricultural Adjustment Administration program in the hands of the Extension Service through the State Colleges." House Hearings on 1944 Agricultural Appropriation Bill, p. 1343.

¹⁶ *O.p. cit.*, Hearings, p. 145.

¹⁷ This occurred on January 23, 1943 by the Commissioner acting under execu-

Food Administrator was instructed to apportion approximately half of the funds among the State Agricultural Extension Services on the basis of need.

Among the purposes for which the funds were to be used, recruitment, placement, training, and transportation of farm workers were listed as key items. The War Food Administrator immediately set up a new Office of Labor replacing the one created 2 months earlier by the Secretary. Colonel J. L. Taylor was placed in charge of the new office and he rapidly developed a program along the lines indicated as desirable by the Congressional Hearings. The Office of Labor undertook the responsibility of bringing in foreign labor and transporting domestic laborers requiring government transportation within this country. It also worked with the various agencies in Washington, such as the War Manpower Commission, the Selective Service, and the War Production Board on the solution of manpower problems affecting agriculture.

The county agricultural agents and the state extension directors were held responsible for certifying the need for outside labor and for carrying out the local arrangements for the use of labor brought in by the Labor Office.

When the War Food Administrator appeared before the House Subcommittee on Agricultural Appropriations in early 1944, he reported that in spite of a late start substantial activity was reported by the Office of Labor in 1943. The following foreign workers were imported:

8,828 from Jamaica
4,698 from the Bahama Islands
52,098 from Mexico

The Office of Labor paid all transportation and subsistence costs for these workers from their home town to the place of work in the United States and for their return after the season of employment. The United States employers paid the workers the prevailing wage rates in their communities.¹⁸ In order to get the consent of the foreign governments, it was necessary to guarantee workers minimum wages, housing and health facilities. These in turn were made a part of the employer's obligation when hiring foreign labor.

Although the Army did not make a practice of furloughing men for farm work, Camp Commanders issued 1, 2 and 3 day passes for men to assist with the farm work during the critical harvest

utive order 9279. It was the result of Congressional dissatisfaction with the farm recruitment and placement service of the U.S.E.S. in the fall of 1942.

¹⁸ Hearings, pp. 762-765.

periods. The Office of Labor also assisted in the movement of migratory labor to assist in the fruit, wheat and potato harvest.

Wartime Farm Labor Program Successful

The 1943 Farm Labor Bill included the limitation that "No funds . . . shall be expended for the transportation of any worker from the county where he resides or is working to a place of employment outside of such county without the prior consent in writing of the county agent . . ."¹⁹ This section effectively reduced the inter-county movement of all except the seasonal farm labor force. It was not as serious a factor leading to labor hoarding as expected by many, however, because by 1943 a large part of the extra workers had already migrated from the labor surplus areas. Surveys in the Southern Appalachian States showed that they still had more men on farms than were needed for farm production. In general, however, all areas experienced shortages in commercial agriculture, the differences were only relative. By 1944 each section of the country had adjusted its farming operations to its local labor supply except for seasonal labor imported from other areas or from other countries by the Office of Labor and State Extension Services.

Although farm labor continued to be very scarce throughout the war period, farmers, farm leaders and congressmen were well satisfied with the labor recruitment and placement program carried out by the Extension Service and the Office of Labor. A few statistics from the 1945 annual summary of the Extension Service farm labor program indicates the scope of its activities.²⁰

NUMBER OF PLACEMENT OFFICES OPERATED

a. by employed personnel	3,734
b. by volunteer leaders	4,021

NUMBER OF COUNTY FARM LABOR ADVISORY COMMITTEES

2,165

RECRUITMENT AND PLACEMENT

Est. No. different farmers obtaining 1 or more workers	669,380
Est. No. different men placed	1,794,379
Est. No. different women placed	360,536
Est. No. different boys (under 18) placed	464,538
Est. No. different girls (under 18) placed	276,806
Est. Total different individuals placed	2,896,259

HOUSING AND TRANSPORTATION

Farm labor camps receiving some financial support from Extension Farm Labor funds	404
Number different workers housed	97,000
Number inter-state workers for which transportation was paid	15,373

¹⁹ P.L. 45, 78th Congress, 1st Session, Sec. 4(a).

²⁰ Summary Prepared by Extension Service, Washington, D. C., May, 1946.

Committees also were organized by the Extension Service in towns and cities which organized youth, women, business men, factory workers and others to help with the harvest of fruits, vegetables and a few other crops.

The Office of Labor reported the following number of foreign workers and prisoners of war employed on farms in the United States, November 1, 1945.²¹

From Mexico	44,897
From Jamaica	11,499
From Bahama Islands	4,248
From Newfoundland	932
Prisoners of war	115,369

The year 1945 marked the peak of employment of outside labor. A year earlier somewhat fewer foreign workers and considerably fewer prisoners of war were employed. Lack of transportation facilities at times limited the number of workers brought in from the islands. On at least one occasion airplanes were used to fly in urgently needed workers when ocean shipping could not be obtained.

The government's program of channeling a large part of the materials available for farm machinery manufacture into harvesting machines, such as corn pickers, combines, potato diggers and hay balers greatly reduced the seasonal labor requirements in harvesting the staple crops. Community programs of using such machines as widely as possible received hearty support in all sections of the country. For this reason while there were instances of the business houses in small towns closing for short periods to assist with the harvest they were much less common than in World War I. Reports of idle crop land or crop losses because of insufficient help at harvest time are almost nonexistent. The shortage of labor was a factor, however, in the failure to meet the sugar beet goals throughout the war years and undoubtedly it was a factor in the reduction in the corn acreage in 1945.²² Had more labor been available larger acreages of a number of labor intensive crops might have been planted, but with the exception of sugar beets the National objectives or goals were generally met throughout the war period. Feed, rather than labor, became the limiting factor in livestock production after 1942.

²¹ Farm Labor, BAE Mimeo., November 18, 1945, p. 16.

²² The cold wet spring in 1945 delayed farm work and was another important factor limiting the corn acreage.

Farm Wage Rates Triple During Wartime

One of the important factors holding labor on the farms during the war period was the rapid rise in wages paid. This was the only incentive that could be used to hold the men above the draft age. Differences in the rise of wage rates in different sections of the country are an indication of the relative scarcity of farm labor for even though labor could not be recruited outside the county and boys of draft age could not leave, competition for the local labor forced wage rates up more in some states than in others. The increase in average wage rates per month by states between 1939 and 1945 was as follows:

	Average wage rates, 1945, as a percent of 1939*	Average wage rates, 1945, as a percent of 1939*	
Maine	274	Kentucky	239
New Hampshire	216	Tennessee	240
Vermont	249	Alabama	271
Massachusetts	217	Mississippi	264
Rhode Island	214	EAST SOUTH CENTRAL	254
Connecticut	203		
NEW ENGLAND	229	Arkansas	283
New York	262	Louisiana	255
New Jersey	246	Oklahoma	325
Pennsylvania	224	Texas	328
MIDDLE ATLANTIC	244	WEST SOUTH CENTRAL	298
Ohio	227	Montana	302
Indiana	244	Idaho	337
Illinois	248	Wyoming	308
Michigan	260	Colorado	313
Wisconsin	267	New Mexico	270
EAST NORTH CENTRAL	249	Arizona	261
Minnesota	283	Utah	251
Iowa	286	Nevada	271
Missouri	274	_MOUNTAIN	288
North Dakota	385	Washington	351
South Dakota	336	Oregon	333
Nebraska	357	California	279
Kansas	330	PACIFIC	321
WEST NORTH CENTRAL	322	UNITED STATES	274
Delaware	260	* Composite (average of all classes of payments). Source: Farm Labor—BAE Mimeo. February and March 1946.	
Maryland	244		
Virginia	231		
West Virginia	222		
North Carolina	265		
South Carolina	259		
Georgia	283		
Florida	324		
SOUTH ATLANTIC	261		

The greatest increases occurred in the Great Plains States and those where feed and livestock production were heaviest. These are also the states where military deferments were largest in relation to total farm employment. In the Southeastern States where farm wages have always been lowest the percentage increase was smaller than the United States average. In the New England States, where competition from industrial employers has been greatest for a number of years, farm wage increases were not as great as in the Midwest.

Partially because of the continuing droughts, 1939 farm wage rates were abnormally low in relation to the National average in the Great Plains States and the good crop years during the war were a major factor in the large percentage increases recorded in these states. The outstanding wage rate increases recorded in the Pacific and Mountain States reflect the increased competition of new West Coast war industries.

Farm wage rates rose far more in World War II than in World War I. The comparison in terms of index numbers is as follows:

	World War I 1913 = 100		World War II 1939 = 100
1914	98	1940	102
1915	100	1941	125
1916	110	1942	163
1917	138	1943	215
1918	174	1944	256
1919	204	1945	285
1920	239	1946	295*

* estimated

Farm Wage Stabilization Undertaken in Several Areas

In Great Britain, County boards composed of farmers, workers and representatives of the public have been setting local farm wage rates for a number of years. Authority for somewhat similar farm wage control existed in the United States during the war years. Soon after the Office of Economic Stabilization was set up with such powers in October, 1942, authority to control agricultural wage rates was delegated to the War Food Administrator. In general it was believed necessary to allow local wage rates to continue to rise in order to maintain an adequate supply of hired workers on farms. For this reason little use was made of these regulations. In a few areas, however, competition for labor became so keen that a stabilization program was undertaken. Wage stabilization activities were

undertaken first in the asparagus industry in California in the spring of 1943.²³ The farm wage stabilization program was extended to 18 other farm industries in California in 1943 and 1944 and to a limited number of farm industries in Florida, Arizona and a few other states. The program as a whole had 3 parts: "(1) The setting of a minimum level below which wages and salaries of agricultural laborers may not be reduced; (2) general control of agricultural wages and salaries at or above the level of \$2,400 per annum; and (3) the setting of specific maximum wage rates for particular crops and areas."²⁴ This latter activity and the determination of prevailing wages for prisoners of war and foreign laborers constituted the major part of the government wage stabilization program.

Farm Population Declined 17 Percent; Farm Workers 6 Percent

Probably the great reduction in the farm population during the war will continue to be the most significant change in the farm manpower situation. Between January 1940 and January 1945 an estimated 5 million people left farms for urban residences and the military services. The geographic distribution of this migration is shown in Figure 1. For the most part, this decline in farm population took place in the marginal farming sections of the country and on the smaller less productive farms. Many farm people also shifted to nonfarm employment though continuing to live on farms. Farm consolidation and the enlargement of the commercial farming units were accelerated by the availability of nonfarm jobs at high wages. Many families had equipment enough to farm additional land and expanded their operations as neighbors shifted to war industries. The permanence of this reduction in the farm population depends on the level of nonfarm employment maintained in the years ahead.

The Bureau of Census estimated that 650,000 World War II veterans or half of all farm workers who entered the armed services during the war were again working on farms in March 1946. Over half of the returned veterans were on farms in the South and around one-fourth on farms in the North Central States.

In contrast to the large decline in total farm population, farm

²³ Two Years of Farm Wage Stabilization in California by W. H. Matzler, Bureau of Agricultural Economics, Berkeley, California, Mimeo. Feb. 1946.

²⁴ Wages of Agricultural Labor in the United States by L. J. Ducoff, U.S.D.A. Tech. Bul. 895, P. 108.

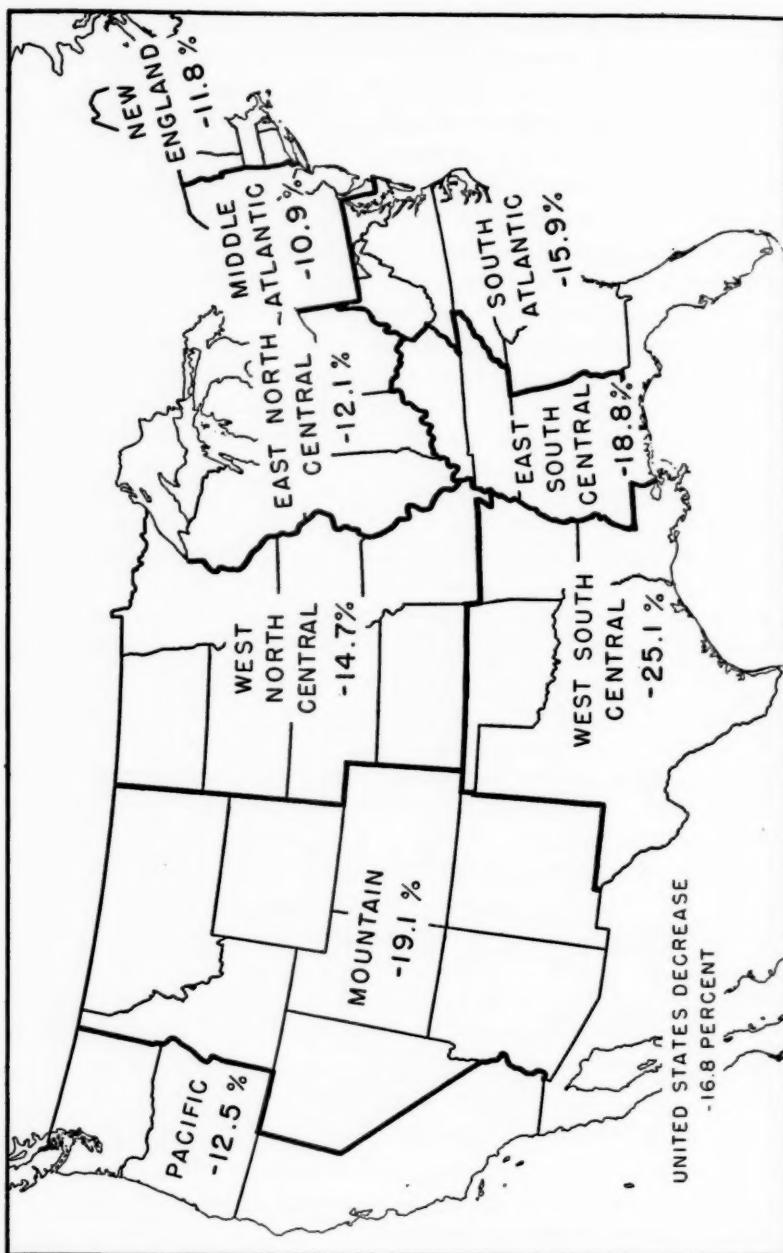


FIG. 1. DECREASE IN FARM POPULATION 1940 TO 1945 BY GEOGRAPHIC AREAS

While the South Central and Mountain States lost a higher percentage of their farm population during the war than other sections of the country, the decline was general. In addition to the decline in farm population, many people continued to live on farms but shifted to non-farm jobs during the war.

employment only declined by about 600,000 workers between 1939 and 1945 of which 400,000 were hired workers.

Decrease in Farm Employment Between 1939 and 1945
(annual averages)

Geographic area	Total Percent	Family workers Percent	Hired workers Percent
New England	6	1	6
Middle Atlantic	4	3	8
East North Central	7	1	29
West North Central	5	0	27
South Atlantic	12	8	21
East South Central	13	10	30
West South Central	11	8	20
Mountain	2	+2*	12
Pacific	+3*	4	+13*
United States	8	5	18

* Increase.

The maintenance of family workers at 97 percent of their prewar numbers could only be accomplished by substituting young children, women and older men for much of the usual working force. Most of the reduction in family workers took place in the Southern States. The reduction in hired workers would have been much smaller if more men had been available. Greatest losses in the hired labor force took place in the North Central and Southern States. As in the last war, however, the shortage of labor has stimulated a sharp increase in the demand for labor saving machinery. Savings from the high wartime incomes will go for labor saving machinery in the next few years on many farms.

Output per Worker up 28 Percent

The wartime increase in output per worker is without parallel. Greatest increases took place in the Plains States where a series of good crop years with large acreages planted to crops permitted increases in output per worker of more than 50 percent in individual states. Increases were smallest in the dairy states (Figure 2).

Farmers increased their average working hours per week in the months June to October 5.6 hours or 10 percent during the war years.²⁵ They will probably return to prewar hours as soon as additional labor and labor saving machines become available. It seems

²⁵ Bureau of Census—The Labor Force Bulletin July 1945. Statistics refer to 1943-44 in relation to 1941. Personal observation leads the author to believe that this understates the lengthening of the work week in the Midwest.

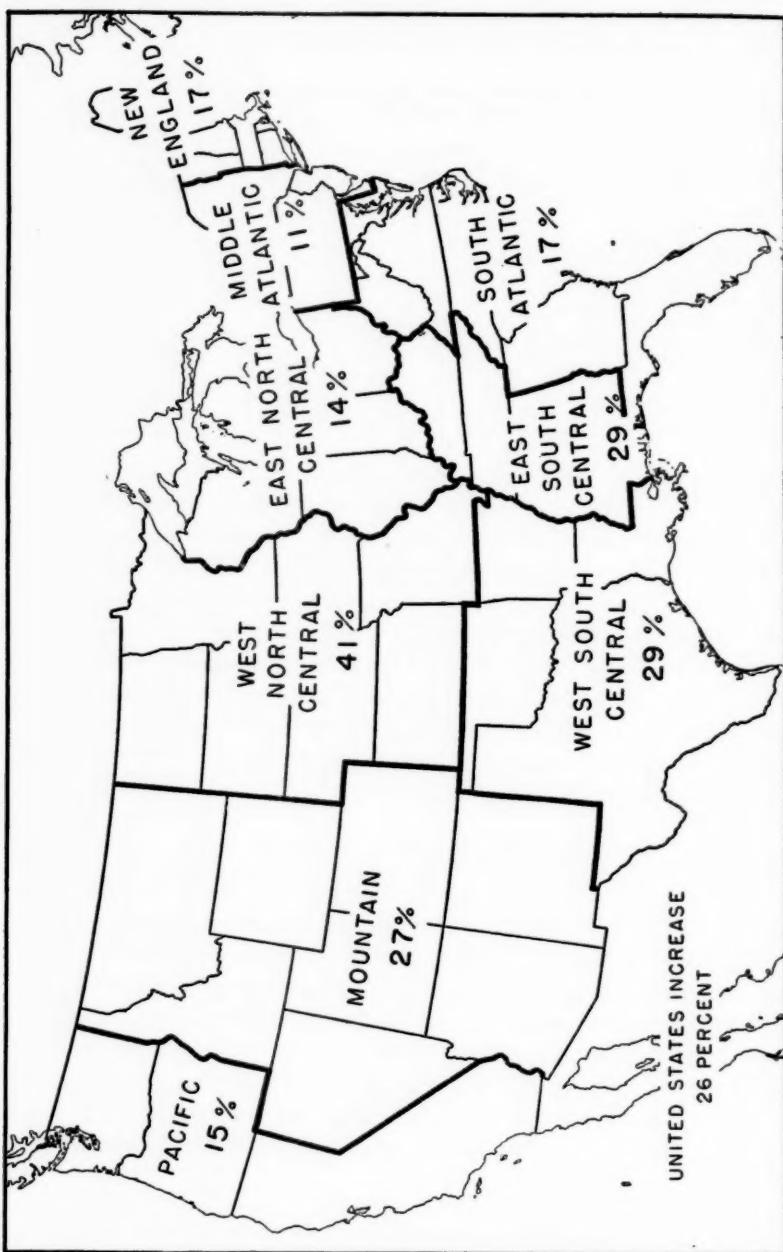


FIG. 2. INCREASE IN GROSS FARM PRODUCTION PER WORKER 1939 TO 1944 BY GEOGRAPHIC AREAS

Crop yields were favorable in both 1939 and 1944. The outstanding increase in gross farm production per worker in the West North and South Central States in part reflects unusually good yields in 1944. But in addition, increased feed grains and soybean acreage and livestock numbers were cared for with fewer workers.

doubtful, however, if they will make any substantial reduction in hours worked per week as long as most of them continue to be self-employed and family income from farming continues low relative to family needs. Without a sharp reduction in the working hours, continued mechanization and improvements in agricultural technology will increase the output per worker above wartime levels. Further reductions in farm employment may be expected unless markets for farm products expand rapidly, especially those for products using high amounts of labor, such as vegetables and dairy products.

MILK PRICE DIFFERENTIALS IN THE SOUTHEAST*

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IT HAS been generally understood that the fluid milk markets in the South are more isolated from each other than in most parts of the North and have much of the character of local markets. The imposition of the General Maximum Price Regulation in May 1942, which set the price of milk in all markets at the highest prices that had prevailed in the preceding March, had the effect of freezing all the local differences in prices in these markets, thus giving the public administrators a chance to observe them at rest or at least in slow motion. The purpose of this article is to describe the structure of prices that was thus revealed in the Southeastern States from Virginia to Mississippi, excluding Florida, and to account for this structure.

I

The differentials found may be briefly summarized by saying that in 639 counties in this region the intra-county range in the retail price of fluid milk of ordinary family grade¹ was from 3 to 5 cents per quart in 102 of them, from 2 to 5 cents in 105 of them, and from 1 to 5 cents in 298 of them. In an appreciable number of counties, particularly in the two Carolinas, the range was as great as 6, 7, 8, 9 and even 10 cents per quart. The intra-county variation was least in Tennessee with its relatively well-developed dairy industry. If Florida prices had been included, the picture would not have been much different.

The differentials between store and home-delivered prices were also quite inconsistent. In some counties in Alabama prior to price

* This paper was initially prepared for the graduate seminar on agricultural economics given by Professor John D. Black in 1944-5 at the Graduate School of Public Administration, Harvard University. Professor Black has helped very greatly on condensing and revising the original paper.

To a large extent the paper is based on data gathered by the Atlanta Regional Office of OPA and on statistical tabulations of these original raw data prepared by Dr. T. S. Berry, member of the staff of that office.

¹ The term "ordinary family grade" refers to fluid milk satisfying the minimum requirements specified by the appropriate health authorities for whole fluid milk sold for human consumption. The standards are not uniform, but no consistent correlation can be found between retail prices and quality of milk sold in different regions of the area. Although the terms "ordinary family grade" or "standard grade A" refer to what in fact is not a perfectly homogeneous product, they do exclude milk which has been established as premium milk.

control, the out-of-store price was as much as five to eight cents higher than the home-delivered price, contrary to what would ordinarily be expected, and in other markets the home-delivered price was higher. Commonly, however, there were no differentials at all. There were equal inconsistencies in prices charged for pints and in the price of milk in paper containers.

The effect of the OPA controls was to reduce price differentials appreciably, but as late as the early part of 1944, the prices paid for whole fluid milk in 359 pairs of adjacent counties differed by 3 cents or more per quart; in 334 cases, by 2 but less than 3 cents; in 461 cases, by 1 cent but less than 2 cents; and in 659, by from 0 to 1 cent.

Before passing on to consider the reasons for these irregularities, we need to ask ourselves how different they really are from what one finds in areas farther north.² In territory such as that lying north of the Corn Belt and in most of the Corn Belt enough milk is produced so that some of it is processed; and the milk used as a fluid has to compete with use in creameries, condenseries or cheese factories, whose products are sold largely in one large national market with differentials determined in the main by transportation costs. Some markets have higher prices than others, because they have to reach out longer distances for their supplies; and there are some important differences in the efficiency of the internal distribution that affect the retail prices. Nor, of course, are all of the markets in the North on a strictly competitive basis: producers and distributors may manage to raise the prices in a particular market somewhat out of line with prices in neighboring markets, and they may have some assistance in this respect from public officials. But in spite of these influences, the retail prices of milk in the different cities and villages in one county tend to keep within a cent of each other. This same description applies to most of the Northeast.

The exceptions both in the Midwest and the Northeast are small cities or villages in areas which depend on local supplies of whole milk and ordinarily have little or none left over for processing. The OPA administrators in 1942 found differentials of 2 cents or even a little more in a considerable number of counties in corn-hog-beef cattle sections of the Corn Belt, in grain and beef-cattle areas in Kansas, Nebraska, and parts of Iowa, in parts of Kentucky and West Virginia, and in some counties in Maine and New Hampshire.

² See especially John M. Cassels, *A Study of Milk Prices*, Harvard University Press, 1937.

II

The explanation of the larger differences commonly found in counties in the Southeast can be best made in terms of several types of situations, as follows:

(1) Frequently the lowest retail fluid milk prices are to be found in the poorer counties. Here the dairy operations are uneconomically small and inefficient, and the man-hour productivity of the dairy labor is extremely low. The farmer has a small piece of land and a few cows. He can earn as much producing milk as in any other way. He has neither the training nor the information necessary to facilitate a rapid shifting of resources from one type of agriculture to another, even if more favorable alternatives should become available. Also the population in these counties is sparse and incomes are low. The extent of the local market is, therefore, narrow, and the effective demand is relatively small.

(2) In the more developed rural counties with larger dairy industries and more extensive outlets for the milk produced, the dairy farms are likely to be considerably larger and better managed. The hourly earnings of dairy farmers may also be larger because of other alternatives. These factors no doubt exist in the Memphis milkshed, for example, and in turn affect the retail price of milk in some of the nearby counties. Prices in these more developed counties lying within the pull of a major market also reflect in some measure the demand conditions of the major market. The larger fluid milk demand in such cases is likely also to be reinforced by the demand of processing plants. In the lower-priced sections of Tennessee and Mississippi particularly, inter-county price variations can be accounted for very largely by the demands for milk for manufacturing purposes. Those producing and selling milk in this kind of situation are generally better informed as to market conditions and are more aggressive in their marketing transactions than the dairy farmers who operate small establishments and sell milk to people who stand largely in the relation of neighbors.

An illustration of such a contrast of market situations may be found in several counties in Southern Mississippi—Pike, Lincoln, Lawrence, and Simpson. In March 1942, the retail prices in Pike county varied from 15 cents in McComb with a 1940 population of 9.9 thousand, to 13 cents in Summit with a population of 1.3 thousand, to 12 cents in Magnolia with a population of 2.1 thousand. In Lincoln county, three producer-distributors were selling milk at 14 cents at retail in March 1942, and one producer-distributor was

selling at 12 cents. The population of the market in Lincoln county, according to the 1940 census, was about 6.2 thousand. In Lawrence and Franklin counties the retail price was 10 cents in March 1942, and the population of the two counties was 0.8 thousand and 1.2 thousand respectively. On the basis of 1940 census data, in 1939 the milk production per square mile was between thirty and thirty-nine thousand pounds in Pike and Lincoln counties, and between twenty and twenty-nine thousand pounds in Lawrence and Franklin.

The important fact for present purposes is that fluid-milk prices in such areas must be understood not in terms of a far-reaching system of interdependent prices, but rather in terms of local markets whose degree of isolation is by no means uniform. In the higher-price counties the dairy industry is more developed than in the lower-price counties not only in the sense that the milk production per square mile is larger, but also in the sense that more than 75 percent of the milk produced in these counties enters into commercial channels. In the lower-price counties, apparently less than 25 percent of the milk produced is sold.

(3) Closely related to the foregoing points is the fact that in the absence of a well developed, integrated milk industry, the influence on relative market prices exerted by custom and selling attitudes becomes significant. There are markets in which it appears that in the absence of any organized consumer interest, aggressive salesmanship has succeeded at some time in the past in establishing retail prices that are high in relation to prices in adjacent areas. Because of the lack of effective inter-market competition, such a price may come to acquire the prescriptive authority of habit and to be taken as a matter of course by the traffic which must bear it. It may even in a spirit of community interest be defended as "necessary" by those paying it. It is difficult to weigh the actual effect of such qualitative factors, but there can be little doubt concerning their importance. The encrustations of custom can come to lie deep and heavy, and to yield only to some new active force which intrudes into the situation.

An interesting example of price disparities in which such elements of custom seem to have been of some effect may be found in a block of fifteen counties in Southwest Georgia.³ The following

³ The counties of Seminole, Decatur, Grady, Thomas, Brooks, Cook, Colquitt, Mitchell, Baker, Miller, Early, Clay, Calhoun, Dougherty, and Worth.

table gives the retail quart prices at which fluid milk was being sold in March 1942 and gives the 1940 population figures corresponding to these prices for the same areas.

TABLE 1. RETAIL FLUID MILK PRICES IN CENTS PER QUART IN MARCH 1942 IN CERTAIN COUNTIES IN GEORGIA

County	Town	Population in thousands	Sellers*	Retail prices
Seminole	Donalsonville	1.7	2 PD	14¢
Decatur	Bainbridge	6.4	4 PD	17¢
Grady	Cairo	4.7	3 PD	14¢
Miller	Colquist	1.4	1 PD	14½¢
Thomas	Thomasville	12.7	1 D 3 PD	13¢ (wholesale) 15¢-16¢
Colquitt	Moultrie	10.1	1 D 2 PD 2 PD	16¢ (store) 17¢ 16¢
Cook	Adel	2.1	1 PD	10¢
Mitchell	Camilla	2.6	2 PD	12½¢
	Pelham	2.6	1 PD	13¢
			1 PD	12¢
Baker	Newton	.5		12¢ (store only)
Early	Blakely	2.8	3 PD	15¢
Clay	Ft. Gaines	1.4	2 PD	10¢
Calhoun	Arlington	1.3	1 PD	12¢
	Edison	1.2	1 PD	12½¢
Dougherty	Albany	19.1	1 D 1 PD 1 PD	17¢ 17¢ 17¢
Worth	Sylvester	2.2	1 PD	12¢
Brooks	Quitman	4.4	1 PD	14¢

* Pd—Producer-Dealer D—Dealer

In Seminole, Decatur, Miller, Baker, Calhoun, and Dougherty counties the milk production per square mile in 1939 was less than ten thousand pounds. In the other counties in the group, the milk production per square mile appears to have been more than ten but less than twenty thousand pounds. Most of the milk produced in these counties comes from farms with only one or two cows. Generally, most of the milk is not marketed in commercial channels. Cook county has somewhat more cows than the other counties. Each county must to a very large extent be considered as a separate local unit. The prices reflect no close inter-county supply and demand relationships.

It might be expected in such a situation that both prices and the volume of milk sold would tend to vary with the size of the market outlet. This is only very roughly true. In Bainbridge in Decatur

county and Moultrie in Colquitt county, for example, with populations of about 6.4 thousand and 10.1 thousand respectively, most of the fluid milk was sold at 17 cents per quart, though some was sold at 16 cents; whereas in Thomasville in Thomas county with a population of 12.7 thousand, milk was sold for 15 and 16 cents per quart in March 1942. In Fort Gaines in Clay county with a population of about 1.4 thousand, milk was being sold at retail for 10 cents per quart, and in Newton in Baker county with a population of only about a half a thousand, milk was being sold wholesale to stores at 12 cents per quart. The force of custom seems to outweigh this influence in most counties. This general conclusion has been borne out by direct contacts with those selling milk, especially in the counties with the highest prices.

(4) More complete analysis requires some consideration of relationships between retail prices prevailing in counties lying within the sheds of major city markets, and the producer and retail prices at which milk is bought and resold in these markets. If within the milkshed of a given major city market, there is a well organized market in milk purchased at the producer level for resale as whole fluid milk within the wholesale and retail city market, wholesale and retail prices in small towns within the shed need to be sufficient to provide any producer-distributor with returns which, minus the cost of processing and distributing, are at least equal to those obtained by selling in the city market. An example somewhat to the contrary was found in the Atlanta milkshed. At about the time the price ceilings were established, the weighted average fluid retail price in Atlanta was 15 cents per quart, providing a retail margin over the producer price of approximately 8 cents per quart. If a total cost of processing and distributing of about 6 cents per quart be assumed as the lowest at which milk could be sold in the rural towns, the retail price in these towns would have had to be about 13 cents. But in fact, the retail prices in counties lying within the general pull of the Atlanta market varied from 10 to 15 cents per quart, or even higher for milk sold out-of-store. Such differences could not be taken as reflecting only differences in transportation cost, and serve to indicate the relative lack of adequate organized marketing and transportation outlets for fluid milk in some of these local markets, and the consequent persistence of "village economies," subject to price-making influences discussed in earlier sections. Such situations, because of their prevalence, must be given

appreciable weight in any consideration of dairy farming and milk prices in this region.

(5) Thus far nothing has been said concerning the relationships between major city markets. Adequate information is not available to establish clearly the extent to which they and their milksheds are isolated from one another. The difference in the interdependence of these markets and the markets from Richmond north is one of degree only. The available facts seem to indicate that because of the relative under-development of dairy production and marketing in this region as compared with the Northeast and Midwest, the city markets in this region have not been bound together nearly as closely as the markets in these other regions. Some of these facts are the following:

(a) In 1939, a third of the farms in the eight Southeastern States were not milking cows, as compared with only 24 percent of the farms in the rest of the country. Of the farms that were milking cows, 56 percent had only one cow, 83 percent had no more than two cows, 94 percent had no more than four cows, and only 2 percent had more than nine cows, as compared with approximately 31 percent, 51 percent, 68 percent, and 13 percent, respectively, for the remainder of the country.⁴

(b) Similarly, 55 percent of the milk produced on the farms in this area in 1939 was used there either for feeding livestock or for consumption as cream, milk, or butter by the farm family, as compared with only 17 percent of the total production used on the farms in the rest of the country.⁵ In the rest of the country in 1939, approximately 33 percent of total milk production was delivered to processors and handlers as cream, and approximately 43 percent as whole milk. Under the impact of the wartime milk shortage, the milk entering commercial channels in this region, including Kentucky, increased to 52 percent of the total volume of milk produced in 1942, as compared with 86 percent for the rest of the country. This increase in the proportion of milk sold commercially in 1942 as compared with the proportion in 1939 was due primarily to the increase in sales of whole milk to processors and handlers.

(c) The milk producers in this area are less well organized into

⁴ Kentucky is not included in either set of figures. See "Summary and Analysis of Milk Marketing Problems in the Southern Region," *United States Census of Agriculture*, 1940, page 19.

⁵ *Ibid.*, pages 28-32, Tables 6, 7, 8, and 9.

bargaining and marketing cooperatives. The relative absence of such cooperatives is to some extent reflected in the fact that producers are generally paid on a flat-price basis rather than on a class-price or base-rating plan or some combination of these, as they are in the larger and better organized milk-producing and milk-consuming areas.

(d) Milk production appears to have developed in response to two sets of forces: one, the pull of markets not always located in areas well suited to milk production, and the other, the incentive offered by land well adapted to milk production where the opportunity cost of producing milk is relatively low.⁶ Our concern here is mainly with dairy farming developed in response to the first of these sets of forces. The city milksheds thus arising are relatively small and far apart as compared with the urban agglomerations of the Northeast and Midwest.

The following tentative conclusions would appear warranted. The size and location of fluid milk markets and the consequent size of dairy farming operations are such as to result in significantly less overlapping of production areas in this region than in the Midwest or Northeast or the remainder of the country taken as a whole. Also as a result of the lack of adequate marketing facilities and well organized marketing agencies operating for the dairy farmers and of the small size of dairy farms, milk producers in times of normal supply and demand relationships are poorly informed as to the relative advantages of alternative marketing outlets, and even if informed, are largely unable to avail themselves of those markets offering higher returns.⁷ In such situations a correspondingly large degree of intermarket price disparity can be expected.

The principal offsetting circumstances are that a certain amount of cream was shipped from market to market even in normal times, and there is evidence that even before the war some of the larger markets imported milk from distant sources during the winter. Furthermore, there are some producer cooperatives and handlers supplying more than one market, such as the Eatonton cooperative which sends milk to both Atlanta and to Savannah, and a large North Carolina handler buying in western North Carolina and selling to dealers for resale in different markets.

⁶ *Ibid.*, pages 10-17.

⁷ For a discussion of the effects of the volume of milk production on the proportions entering commercial channels and on the modes of disposition, see *Ibid.*, pages 21-24.

Public milk administration in wartime in this region, therefore, had to start with a system of price disparities and to establish ceilings which would reduce such disparities sufficiently to prevent serious intermarket diversions resulting from the wartime milk shortage. Table 2 sets forth retail and producer milk prices and

TABLE 2. AVERAGE PRODUCER PRICES, RETAIL PRICES, AND DISTRIBUTOR MARGINS ON WHOLE MILK IN REGION IV BY OPA DISTRICTS, MARCH 1942 AND OCTOBER 1942, WEIGHTED BY DISTRIBUTOR PURCHASES ON SALES (local)

State	District	Producer	Retail	Retail
		prices (\$—cwt)	prices (\$—qt)	margins (\$—qt)
		March 1942	October 1942	
Alabama	Birmingham	3.58	16.29	8.60
	Montgomery	3.61	16.14	8.40
Florida		3.85	17.76	9.49
Georgia	Atlanta	3.40	15.84	8.53
	Savannah	3.69	16.40	8.47
Mississippi		2.80	14.47	8.45
North Carolina	Charlotte	3.41	16.31	8.98
	Raleigh	3.54	16.65	9.04
South Carolina		3.75	16.32	8.26
Tennessee	Memphis	3.22	12.24	5.32
	Nashville	2.80	12.76	6.74
Virginia	Knoxville	3.02	14.18	7.69
	Roanoke	3.45	13.70	6.29
	Richmond	3.32	14.60	7.47
	Norfolk	4.39	17.94	7.72

margins by state and district for certain specified dates.⁸ Except for a few individual price adjustments made between March and October of 1942, the retail prices in this table were established before price control. The producer prices were not brought under control until the early part of 1943. The data in this table are not very satisfactory, because they conceal to a large extent the local price discrepancies noted earlier; but they serve to show in a general way how fluid milk prices in the areas covered largely by the coastal plains and flatwoods shade off gradually in the areas of the Piedmont Plateau and Blue Ridge Mountains included within the districts of Atlanta, Charlotte, and Richmond, and in the western part of South Carolina and in Alabama with its rather heterogeneous soils. The highest fluid milk prices in the Southeastern region and in the entire country are to be found primarily along the Atlantic

⁸ These districts are Office of Price Administration districts under the supervision of the Atlanta Regional Office. These districts are used because, as has been indicated, most of the data were gathered by that agency for its use.

and Gulf Coasts.⁹ This area includes roughly Florida, most of South Carolina, the districts of Savannah, Raleigh, and Norfolk, and certain markets in Alabama and southern Mississippi. The lowest prices are found in Tennessee, which has soils of generally better quality for milk production, and in Mississippi, which varies in its suitability for milk production.

In the coastal plain areas, the ratio of purchased feed to total feed used is extremely high, even though efforts are being made to improve pasturage. These high-cost conditions of supply, combined with a large wartime population increase around the locations of shipyards and Naval and Marine installations, brought retail prices of 18 and 19 cents per quart in some markets. The Piedmont and mountain areas appear to be better suited to milk production, and the volume of milk produced per square mile is much greater than on the coastal plains. But milk produced in this area is located closer to the major population centers, and the prices in this intermediate zone are not as much below the prices generally prevailing on the coastal plains as the differences in production conditions alone would suggest. For example, developments in milk production in the Black Belt of Alabama and in western North Carolina around Asheville have been made, but the expansion of marketing facilities both for fluid milk and for processing milk has raised fluid milk prices in these areas beyond what "local" supply and demand for fluid milk would lead one to anticipate on the basis of such relationship in the eastern part of the region. The lowest prices are found in Tennessee and Mississippi, with a volume of output clearly in excess of local consumption as fluid milk. Even though there is considerable manufacturing of milk products in these two states, the prices in some cases appear to be lower and output to be less than would be the case if more extensive and better organized marketing outlets were available.

III

The analysis thus far has centered primarily on what appears to have been the general relationships between prices in the fluid milk markets just prior to the war. It is important to understand what in general the effects of wartime conditions have been on fluid milk prices in this area.

⁹ For a complete map of the major soil divisions of this region, see Map 1, reproduced from the South Division Map of the Southern States in "Summary and Analysis of Milk Marketing in the Southern Region," *op. cit.*

By the fall of 1942, the wide price disparities prevailing prior to the war, and frozen by the General Maximum Price Regulation, permitted serious intermarket diversions of fluid milk supplies. The demand for fluid milk at established ceiling prices rose with the increase in population of the region and with higher wartime per capita incomes. In 1940, the census for the eight states reported a population of approximately 21,000,000. In January 1944, a total of 20,900,000 ration books, No. 4, had been issued. Military personnel and civilians not holding ration books would add approximately another two and a half million. The increase in population was highly concentrated in certain areas, and this accentuated the dislocating effects on fluid milk distribution. The increases in civilian population were partly in the larger cities and partly along the coast where local milk supplies were smaller and the prices higher than in other parts of the region.

Another factor in the situation was that the price of mixed dairy feed increased uniformly throughout the region from 35 to 40 percent between March 1942 and January 1944. In September 1942, 16 percent dairy feed sold for \$2.30 per hundredweight, as compared with \$3.16 in January 1944, an increase of 37 percent. The increases in hay prices appear to have been much less uniform. In Atlanta at one extreme, the price of hay in January 1944 was \$47 per ton, an increase of 46 percent over the price in March 1942. The actual effect of increases in feed prices on milk production will vary considerably with the ratio of purchased feed to total feed used. This ratio varies greatly from one part of the region to another. In March 1943 the ratio was approximately 65 for the region as a whole. Approximately 35 percent of the producers covered in the survey from which these figures were derived reported that they purchased nearly all the feed they used. Most of these producers are located on the coastal plains. In most of Tennessee and Mississippi the ratio was much lower.

Attempts to divert a larger proportion of the total milk produced from consumption on the farms ran into sanitary restrictions and lack of adequate transportation and organized marketing facilities, but the percentage of milk sold increased somewhat. The large seasonal fluctuations in production also accentuated the shortages of fluid milk in the fall and winter. Some city markets normally import milk from outside the region during the fall and winter, but estimates of the extent of these importations are difficult because

of the large wartime importations for military personnel. In the earlier days of the war, military establishments would frequently compete among themselves and divert a large portion of the fluid milk supply from small rural towns. But the wartime milk situation in the Southeast was only a particular reflection of the general lack of a coordinated food program, and during at least the earlier part of the war, of the failure to establish the price relationships and to undertake all the direct measures necessary to the effectuation of such a program.

In order to relieve the pressure of rising costs to some extent and to reduce the grosser intermarket price disparities, a program of price adjustment was undertaken. Retail fluid milk prices, weighted by 1940 population, increased in the region as a whole from approximately 14.6 cents per quart in March 1942 to approximately 15.6 cents in December 1943. In general, the retail prices in the larger city markets in December 1943 averaged about one cent higher than for the region as a whole. Although accurate figures are not available, producer prices increased somewhat more than retail prices. It is estimated that the price for 4-percent milk for consumption as fluid milk was \$4.23 per hundredweight in January 1944, as compared with \$3.45 in March 1942. Despite the decrease in unit margins, however, the increase in sales more than maintained distributor profits. Between 1941 and 1942, net operating profits of ninety-two distributors in the eight states increased on the average 40.2 percent, and they are known generally to have increased still more in 1943.¹⁰ It appears, furthermore, that the producer price increases, plus the various subsidy payments for feed and milk, had by January 1944 generally been more than sufficient to offset production cost increases. Also, the different War Food Administration limitation orders on fluid milk and milk products relieved considerably the competitive pressures on milk supplies.¹¹

The following data are relevant to changes in milk supplies accompanying these price changes. Between March 1942 and March 1943, according to information covering 1390 producers, the number of cows increased from 78,040 to 85,850, an increase of approxi-

¹⁰ It should, of course, be emphasized that the estimates on prices and profits are averages only and thus conceal significant individual variations.

¹¹ Up through 1943, apparently no overall decision had been made concerning the allocation of feed among alternative users. It might also be remarked that inadequate feed price control even after feed prices had reached parity contributed to the diversionary pressure on fluid milk.

mately 10 percent. Figures are not available to show what the wartime trends in feeding have been, but according to information reported by the health departments, the volume of fluid milk marketed in the eight states for civilian consumption increased from 110,893,000 pounds in October 1941 to 137,897,000 pounds in January 1943, an increase of 24 percent. In January 1943, the purchases of milk by distributors were divided as follows: 7.1 percent was from outside the region, 2.4 percent from sources outside the states in which the purchasers were located, 11 percent from "distant" sources within the same state, and 79.5 percent from local producers.¹² Distributors' sales in the local civilian markets increased 48.3 percent over October 1941. The military purchases of fluid milk in January 1943 were a fifth of the total. Part of this was supplied by Southern distributors, and part was imported directly from sources outside the region. Only toward the end of 1944 did the increases in fluid milk supplies begin to taper off. A survey, made by the Georgia Milk Control Board, intended to show that milk producers were leaving the industry, actually showed that in the first half of 1943 the number of producers entering the industry exceeded the number withdrawing.

These data seem to indicate that the South is, on the whole and in normal times, approximately self-sufficient in its fluid-milk supplies. If allowance is made for abnormal wartime receipts and consumption, it appears that the milk purchased from within the region exceeded by a small margin the amount resold in civilian markets.¹³ This statement is not intended, however, to imply that milk production is adequate to satisfy the potential needs of improved diets.

The so-called Wickard Plan for postwar reconstruction of southern agriculture, designed to enable cotton to compete in the world market without subsidization, would involve among other things a very considerable expansion of dairy farming in the South. The program would provide for expanded markets within the South to absorb the increased supplies of dairy products. Such expansion of dairy farming in the South is conditioned upon an increase in feed

¹² These figures suggest some overlapping of major city milksheds, but there were wartime purchases to satisfy increased demand. The purchases were in most cases highly concentrated, and did not indicate any general or uniform interlocking of production areas.

¹³ It should be emphasized that these figures cover only purchases and sales of whole fluid milk.

acreage and yields, upon improved dairy feeding,¹⁴ and upon the establishment of new milk processing and milk manufacturing plants throughout the region. A simultaneous and inter-related expansion of milk production and marketing facilities would break down much of the individual market segregation now existing. It may be anticipated, therefore, that such a program would cause fairly large-scale changes in previous intermarket price relationships. These price changes would require realignments both of retail prices and of the relationships between retail and producer prices. The producers would also probably need some aid in establishing bargaining and marketing cooperatives. The change in attitudes upon which the successful operation of such a program would depend would take more time perhaps than the technical and economic considerations alone may indicate.

¹⁴ See *A General Appraisal of the Livestock Industry in the Southeastern States*, Bulletin 257, prepared by W. K. McPherson, Agricultural Experiment Station, Alabama Polytechnic Institute, June 1942.

A RATIONAL SYSTEM OF AGRICULTURAL PRICE AND INCOME CONTROLS*

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THREE is widespread agreement among agricultural economists that parity prices are not good bases for agricultural price or income controls.¹

The reasons for this are comparatively simple and clear. Parity prices freeze price relationships among agricultural products, and among agricultural and other products, in a pattern that in most cases is more than 30 years out of date. It certainly is not well adapted to changing requirements from year to year now—big crops, poor crops, peace, war, etc. Parity misdirects both the production and the consumption of farm products.

Parity also is unsatisfactory in its other use—as a standard for measuring the economic status of agriculture. It is highly inaccurate. Agricultural prices in 1944 averaged 115 percent of parity, but net farm income—the thing that really counts—had more than twice as much purchasing power (204 percent) as it had in 1909–14. As a measure of net income then, parity prices in 1944 were 77 percent inaccurate ($204/115 = 177$). The inaccuracy of parity price as a measure of net farm income results from the fact that net farm income varies not only with prices but with quantities produced. It also varies with the costs of production (that is, with the quantities as well as the prices of the goods and services used in production). And in any case, even if parity prices did accurately measure parity net income, and parity were attained, that would not at all mean that parity between agriculture and other groups had been attained; for most other groups are considerably better off now than they were in 1909–14.

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¹ W. H. Nicholls, et. al., "A Price Policy for Agriculture, Consistent With Economic Progress, That Will Promote Adequate and More Stable Income From Farming," this JOURNAL, Vol. XXVII, No. 4, Nov. 1945; T. W. Schultz, *Agriculture in an Unstable Economy*, McGraw-Hill Book Company, Inc., New York, 1945; L. J. Norton and E. J. Working, "A Proposal for Supporting Farm Income," *Illinois Farm Economics*, Univ. of Ill., Dec. 1945 and Jan. 1946, Nos. 127 and 128; K. T. Wright, "Basic Weaknesses of the Parity Price Formula for a Period of Extensive Adjustments in Agriculture," this JOURNAL, Vol. XXVIII, No. 1, Feb. 1946; O. C. Stine, "Parity Prices," this JOURNAL, Vol. XXVIII, No. 1, Feb. 1946.

It is comparatively easy to show what is wrong with parity, but it is far more difficult to work out something better. Several agricultural economists have recently made the attempt; they have proposed other bases for price controls, to replace parity prices.²

Their proposals differ considerably. Some of the proposals deal only with parts of the problem, while others are outlined only in general terms. The present paper is an attempt to outline a co-ordinated system of measures in terms more specific than hitherto.

Agreement on Objective

There is substantial agreement among the recent proposals that the desirable general objective of agricultural price policy is stability of agricultural income, and at a level as high as is consistent with the welfare of the nation as a whole. This objective apparently is based on the reasonable assumption that greater stability of income would increase farm production. This would benefit the nation as a whole as well as benefiting agriculture.

There probably is further agreement that stability of income means stability of the incomes of individual farmers as well as of the group as a whole. And it seems reasonable to believe that income here means net income.

Disagreement on Specific Price Control Measures

There is much disagreement, however, concerning the measures required to attain this objective.

A number of economists urge that the objective can best be attained by abandoning any attempts to control agricultural prices.³ Some of these economists base their views on the belief that politicians will not let economists set prices where economists know they should be. Others argue that any attempt to set prices at some other level than they would attain if they were left alone is bound to misdirect, impede or accelerate production, the flow to market, and consumption, in uneconomic directions. What is required, they say, are prices that will continuously adjust consumption and production to each other; and those are free-market prices. In addition, free-market prices vary inversely with production and therefore

² See the references given in footnotes 1, 3, 5 and 6.

³ Committee on Postwar Agricultural Policy of the Association of Land-Grant Colleges and Universities, *Postwar Agricultural Policy*, Report, October 1944; F. A. Pearson, W. I. Myers, and Don Paarlberg, "Our Problems and World Prices," *Farm Economics*, Cornell University, Ithaca, New York, December, 1945.

result in fairly stable income so far as variations in production are concerned.

At the other extreme, other economists say that unpredictably variable free-market prices are poor guides to farmers as they lay their production plans, and lead to much misallocation of resources. This is not necessarily an argument for controlling prices. In itself it could be merely an argument for the announcement, before breeding or seeding time, of the levels that free-market prices were expected to attain when that season's products are ready to go to market. This would be merely "Outlook" work. But farmers would not pay much attention to these announced forecasted prices unless they were guaranteed minimum prices. So, in view of the unpredictable fluctuations in yields and in demand that are likely to take place between the time of the announcement of the guaranteed price and the time when the product moves to market, guaranteeing minimum prices is likely to involve controlling prices, in a considerable percentage of the cases (whenever the market prices turn out to be lower than the forward prices, as they frequently would).

In between these two extremes, or alongside of them, are various other proposals.⁴ No attempt will be made here to appraise them all. Only two or three representative proposals will be considered. Our own coordinated system of proposals will then be offered.

Modifications of Parity

Several recent proposals use historical bases of one sort or another, like the parity formula, only with a more recent base.

One proposal would use the simple average of two prices over the preceding three years, both expressed in terms of parity. These two prices would be (1) the price-support levels for the product over the past three years, and (2) the average market price over the same period, adjusted where necessary to offset the effect of price raising measures such as storage programs.⁵

This proposal seems like a step in the right direction, but at best it is only somewhat less bad than parity. At worst it is worse than parity.

⁴ See the references given in footnotes 1, 3, 5, 6 and 8.

⁵ Frederick V. Waugh, "A Price Policy for Agriculture, Consistent With Economic Progress, That Will Promote Adequate and More Stable Income from Farming," Third Award Paper, this JOURNAL, Vol. XXVII, No. 4, Nov. 1945. See also "Outline of a Price Policy for American Agriculture for the Postwar Period," Committee on Parity Concepts, this JOURNAL, Vol. XXVIII, No. 1, Feb. 1946.

During a boom, as at the present time, the prices of many farm products would be above parity. In a subsequent recession or depression they would average below parity. It would be difficult to carry a program based on parity through a depression. It would be still more difficult to carry through a program based on parity plus half-of-the-excess-over-parity-during-a-boom. The relative prices thus established might be better guides to relative production than prices based simply on parity, but the system as a whole would be worse. The same thing is true the other way round of prices just after a depression. Prices based on this formula would have been very poor prices to use in 1941, and it seems to me that they would be poor prices to use now.

*Eighty-five Percent of the "Pre-Depression Price"
for Each Product*

Another proposal would use as the base for the price "the pre-depression price." This is defined as "that price for each farm product that reflects accurately both supply and demand conditions (just prior to the depression) when the economy was operating at high production and full employment.⁶

A depression for these purposes is defined thus: "Whenever unemployment exceeded 5 percent of the total labor force, a depression would be deemed to exist." If prices fell below 85 percent of the pre-depression price, the difference would be made up in direct payments to producers.

Under this proposal the pre-depression farm price of hogs in 1930, for example, would have been computed at about \$10 if the average of the five preceding years had been used as the basis. The level below which producer payments would begin therefore would have been about \$8.50. During the next four years, from 1931 to 1934, the farm price of hogs remained well below \$8.50, as shown in Table 1. The payments per 100 pounds that would have been required are also shown.

Total slaughter during those years averaged close to 70 million head. One could knock off 10 million head of farm slaughter, perhaps, on which the payments would not be made, and estimate the average weight of hogs at 250 pounds. The total payments each year would then be approximately as shown on Table 1.

⁶ Theodore W. Schultz, *Agriculture in an Unstable Economy*, McGraw-Hill Book Company, Inc., New York and London, 1945, p. 226.

When the total payments to the producers of other products are computed and added in, the grand total becomes rather large. For our purposes here, it is not necessary to make the detailed computations. A rough approximation can be made by taking 85 percent

TABLE 1. FARM PRICE OF HOGS AND PAYMENTS TO PRODUCERS, 1931-34

Year	Farm price of hogs (\$ per 100 pounds)	Payments to producers	
		\$ per 100 pounds	(millions of dollars)
1931	\$5.73	\$2.77	\$405
1932	3.84	5.16	460
1933	3.53	4.47	548
1934	4.14	4.36	700

of the total pre-depression gross agricultural income per year, and subtracting from that the actual income during the depression. Total agricultural income for 1925-29 inclusive averaged close to 13.5 billion dollars; 85 percent of that would be 11.4 billion. The actual income by years thereafter, and the payments that would need to be made, are shown in Table 2.⁷

TABLE 2. AGRICULTURAL INCOME, AND PAYMENTS NECESSARY TO BRING THEM UP TO 85 PERCENT OF THE PRE-DEPRESSION LEVEL, 1931-35
(Billions of dollars)

Year	Total agricultural income	85 percent of pre-depression level	Total payments required
1931	8.4	11.4	3.0
1932	6.4	11.4	5.0
1933	7.0	11.4	4.4
1934	8.5	11.4	2.9

Source: Agricultural statistics.

It is not clear whether the bases for the forward prices proposed along with the compensatory payments would be the same as for the compensatory payments (85 percent of the pre-depression price of each product) or not. If they were the same, the forward prices

⁷ If payments of the magnitudes shown in Tables 1 and 2 had been made in the first year or two of the depression, their counter-cyclical effect would have reduced the severity of the depression in subsequent years. This would have increased farm income during those years, and thus would have reduced the size of the payments required per unit. But the payments would have induced an increase in the number of units produced. The combined effect of these two factors working in opposite directions is anybody's guess. I see no basis for making an accurate estimate of it.

would certainly be too high most of the time—higher than 90 percent of parity, at present, in many cases. This would direct relative production within agriculture better than Waugh's proposal; but like Waugh's proposal, it would misdirect agricultural production as a whole, misdirect it worse than present parity prices. It would in effect maintain agricultural prices and gross incomes at 85 percent of boom levels, and maintain agricultural *net* incomes higher than this since agricultural costs would decline during the depression. This would attract uneconomically large quantities of economic resources into agriculture.

If this proposal were put into effect at the end of the "Steagall period," it would involve using prices in the neighborhood of those existing now for hogs, wheat, corn, cotton, etc., as the "pre-depression" bases for the following 5 or 10 years. These are pretty high prices, but I feel sure that if Congress adopted the proposal, those are the prices they would want to use.

Perhaps Schultz' proposal would use different bases for the forward prices than the pre-depression prices. If that course were adopted, there would be some question whether anybody would pay much attention to the forward prices. Farmers would not be interested in forward prices of say 75 cents for wheat if they were going to get 75 cents in the market place plus another 50 cents in compensatory payments. They would base their production plans on \$1.25 per bushel without paying much attention to the forward price of 75 cents a bushel.

This proposal would freeze agricultural returns per unit at boom levels, in effect giving farmers 85 percent of the prices they had received during the last boom period. Relative demands change with the change from boom to depression, but relative returns to farmers for the production of different products would remain unchanged, and this would tend to keep relative production unchanged. Gross agricultural income would remain at 85 percent of boom levels, and net agricultural income would be still higher. This would retain more farmers on farms.

After the high net agricultural income had been capitalized into high land values, and after the larger total net agricultural income had been divided up among the larger number of farmers, it is not certain that individual farmers would be any better off than before. And the nation would begin to wonder whether it had helped or harmed itself by subsidizing an already overcrowded industry and retaining more farmers on the land than were needed there.

Preserving the Long Time Relation between Per Capita Farm Income and National Income

Another recent proposal would return agricultural prices to the free market, but would use as the basis for income payments direct to farmers the long time trend relationship between per capita farm income and per capita national income.⁸

In a depression year, for example, when per capita agricultural income was only 80 percent of its trend relation to per capita national income, a production payment would be made direct to each farmer equal to $\frac{(100 - 80)100}{80} = 25$ percent of his income.

This proposal would leave relative prices free to direct relative production, and would maintain agricultural income at average levels rather than at boom levels. It would thus direct agricultural production—both the production of different farm products, and agricultural production as a whole—better, it seems to me, than Schultz' proposal.

But it is not without shortcomings of its own. An extreme illustration will make one of the shortcomings clear. Two farmers might be living side by side in the Cornbelt, both raising 5,000 bushels of corn. The one sells all his corn as cash grain, while the other feeds it all to livestock which he purchases as feeders each fall. A severe drop might take place in livestock prices, say from \$10 to \$7.50 per 100 pounds, such as the decline that took place from December 1930, to May 1931. The price of corn would be likely to decline correspondingly, from 80 cents per bushel to 60 cents, an equal percentage decline (25 percent).

If prices before the drop represented average income levels, the grain farmer would get a production payment then of \$1,000. But the livestock feeder might have paid as much for his feeders as he eventually received from the sale of his fed stock; in that case he would have no income as defined in this proposal; so he would get no production payment at all. Yet this neighbor across the road would get \$1,000. The two men, entitled to similar treatment, actually would get very unequal treatment.

A second shortcoming is more serious. The proposal would freeze the historical relation between per capita farm and non-farm in-

⁸ L. J. Norton and E. J. Working, "A Proposal for Supporting Farm Income," *Illinois Farm Economics*, University of Illinois, Urbana, Illinois, Dec. 1945 and Jan. 1946, Nos. 127 and 128, pp. 309-313. Agricultural income here is defined as gross income minus the cost of feed and livestock purchased.

come, at the same level that existed in some earlier base period. There is no reason to suppose that this is the relation that will be required to allocate resources properly between agriculture and the rest of the economy in the future.

Finally, the proposal would return all agricultural prices to the free market, with all the shortcomings of that market that have proved unsatisfactory in the past.

*Different Measures Needed for Different
Contingencies and Products*

There is not time to appraise other proposals here. We will proceed to the more difficult and more useful problem—what do we propose instead?

Stabilizing prices against fluctuations in supply. One set of measures is required to stabilize prices or incomes against fluctuations in production, and another set against fluctuations in demand. And within each set, different measures are required for different crops. What is needed thus is a system of price controls, each one fitted to the particular conditions of particular crops.

Feed prices need to be stabilized. The evidence seems clear that free-market prices do not work out satisfactorily for one important group of commodities—livestock feeds. Fluctuations in the production of livestock feeds lead to opposite fluctuations in prices and to consequent fluctuations in livestock production and prices. The four-year cycles in hog production and prices are one striking illustration of this. Fluctuations of this sort increase the costs of livestock production, processing, and distribution, and thus reduce the total production and consumption of meat.

Accordingly, the prices of livestock feed crops should not be left to the free market. They should be controlled by storage operations designed to convert an irregularly fluctuating production from year to year into a relatively constant flow to market so as to stabilize livestock production and prices against fluctuations in feed production. For this purpose the loan rates should be set each year at the levels that would move average-weather crops into consumption. This would not stabilize income from the sale of feed grains as such; that income would vary with the size of the crop. But it would stabilize the income from the principal product, livestock, against fluctuations in feed production.

A program of this sort would not stabilize incomes to individual producers. Most individual producers' yields vary differently from

the variation in average yields for the group. Individual crop (yield) insurance would be needed for the attainment of individual income stability from the sale of feed crops as such. If this insurance provided 100 percent coverage, and operated from a high yield base, it would in effect give each producer the equivalent of a full crop each year. Stable loan rates then would stabilize his income. But obviously crop insurance can not provide 100 percent coverage, for if it did, farmers would find it cheaper and easier to farm poorly and collect the insurance, even in good years, than to farm well and collect none. That is the reason why the maximum coverage in existing crop insurance programs has been set at 75 percent. With only 75 percent coverage, the incomes of individual farmers could decline as much as 25 percent below average. Perhaps this is as nearly stable as incomes from the sale of feed crops can be made, consistent with stability in livestock production prices and incomes.

Stabilizing cotton prices would not stabilize cotton incomes. Other products need different measures to stabilize their incomes.

Stabilizing cotton prices would not stabilize cotton incomes; it would cause cotton incomes to vary directly with total United States cotton production. Furthermore, fluctuations in cotton production do not cause corresponding fluctuations in cotton consumption, as in the case of livestock feeds. Cotton consumption varies with industrial activity rather than with cotton production. And finally, cotton is an export crop, and prices need to be lower in years of large United States crops than in years of small United States crops in order to promote larger exports in large crop years. Loan rates that varied inversely with the size of the United States crop would meet these features of cotton better than loan rates that remained constant from year to year.

Wheat prices and incomes. Wheat is in an intermediate situation between cotton and livestock feeds, although closer to cotton than to livestock feeds. Wheat is an export crop, although to a smaller extent than cotton; the United States actually had net imports of wheat during the drouth period, 1934-36. The United States uses about 500 million bushels of wheat for human food year in and year out, almost ignoring variations in production and prices. Variations in production are taken care of by variations in exports, in domestic feeding to livestock, and in year-end carryover. The price program for wheat would be more like the cotton program than the livestock feeds program.

With cotton and wheat, as in the case of livestock feeds, stability of income to the growers of each crop as a group would not bring stability to each grower to the extent that yields varied differently from the variation in average yields. Crop insurance would be required to reduce variations in individual incomes.

This crop insurance could provide only up to 75 percent coverage, and therefore could reduce downward variation in individual growers' incomes at the most only 75 percent, even if average yields and loan rates remained constant. To the extent that average yields and loan rates varied an additional source of instability would exist. A grower whose crop was half wiped out would receive a lower income in a year of good crops for most growers (when prices would be low) than in a year of poor crops, when prices would be high. The unstabilizing effect of this situation could be reduced, since there is some correlation between individual growers' yield and average yields each year, by using loan rates that varied inversely but less than proportionally with the size of the crop. Perhaps this is as close to stability as the individual incomes of the producers of these crops can be brought.

Perishable crop prices cannot be stabilized. In the case of perishable crops there is really no choice between stable price floors and variable price floors that would vary inversely with the size of the crop. Variable price floors would practically have to be used, for a stable price floor set at the right level for an average crop clearly would be too high for a big crop to move into consumption. In most cases stable price floors could be used only at a prohibitive cost for converting perishable crop surpluses into durable form so that they could be carried over to later years of short crop. What would be needed would be a schedule of prices that varied inversely with the size of the crop about the central price for an average crop.

Price floors that depend upon the size of the crop like this would be very difficult to handle for crops that are harvested at different times in different parts of the country. For what is the size of the crop? Is it the size of the United States crop? If so, that size is not known until the crop is all in from the latest areas, perhaps weeks or months after the crop from the early areas had all been sold. If the size of the crop is reckoned separately in separate time areas, there is likely to be trouble at the edges of those areas unless some form of moving price floor can be used.

Furthermore, what is "the crop" in the case of products such as

livestock, butter, eggs, etc., that are more or less continuously produced? Where does the season begin or end?

Different answers would probably be given for different products. The hog crop might be split into two—the spring and fall crops. Butter and eggs probably would do better on a monthly “crop” basis. Answers to these questions can be worked out but not in any simple blanket manner.

In view of these complications, it may be that for the time being, until a good deal of experience had been gained, the most workable floors for perishable crops would be stable floors set low at the level that would be right for a large crop. How much lower this level would be than the level for an average crop would need to be determined separately for each crop.

Setting loan rates and prices. The basic loan rates or prices for each crop would need to be set in advance of seeding, breeding, or feeding each year, at the level that would move an average crop into consumption. How would that level be determined each year?

The BAE plus the state college economists should be able to forecast the prices of the different farm products for a production and marketing period ahead like this with a reasonably high degree of accuracy. They have been doing it in “Outlook” work for over 20 years, most of the time with a far smaller and less well-trained staff than they have now.

The BAE helped to set corn and cotton loan rates at sensible levels before the job was taken out of their hands in 1938. It did a good job early in 1941 when it set a hog price floor of \$9. It did a good job, except where parity legislation prevented it, all during World War II. It even did a good job during and after the war when the time came to reduce the hog price floor to lower levels. There is no economic reason why it could not continue to do a good job in the future.

It may be that Congress would be unwilling to turn the setting of these loan rates and prices over to the BAE without any strings on them. Congress might insist on some sort of formula or formalized procedure which they would lay out.

If so, this formula or formal procedure could start with the loan rate for corn. The need for price controls for corn is more clear than that for almost any other product, for corn is the most important livestock feed and the need for stabilizing the prices of livestock feed is clear. The price of corn can be controlled fairly easily, be-

cause corn can be stored for several years if necessary, and it can be stored in cribs at a lower cost per ton than oats, the next most important feed crop.

It seems to me clearly preferable to stabilize corn prices and let that act as a stabilizing influence on livestock prices than to go at it the other way round, as Nicholls appears to suggest in proposing to "limit forward pricing to livestock and livestock products, since . . . (2) these products, in turn, form the principal demand for the feed grains."⁹ It may be, however, that Nicholls intends forward prices to be used purely as an "Outlook" proposition, in which case it wouldn't make any difference where you started. This point is related to Nicholls' other proposal to conduct storage operations on a physical quantity rather than price basis. In the case of feed grains, it seems to me that the present loan technique is superior to government purchases and sales. The loan rate can be raised or lowered to meet changes in demand, as from peace to war and back again. And the loan technique permits most of the grain in storage to remain in the best place for it—in a crib on the farm where it was grown and in the hands of the man who grew it.

The loan rate for corn should be set each year at the estimated level at which an average-weather crop would move into consumption. Any excess over average-weather production would move into storage, to come out in later years of short crops.

If Congress were unwilling to leave the matter as open as that, and insisted on setting the loan rates at rather high levels, it would not be long until those high rates would decrease consumption and increase production until storage stocks would accumulate and call attention to the matter. Old crop corn stocks (October) grew to 700 million bushels in 1940. They could easily exceed a billion bushels, and still keep on growing. But sooner or later they would reach a size where legislators would begin to listen to the economists' arguments that previously they had brushed aside. You can't brush aside a billion and a half bushels of corn. The 11 million bales of cotton carried over from earlier crops in 1945, and the increasing use of other fiber, is beginning now to temper the thoughts of southern congressmen.

By that time, the legislators would be willing to move in the direction of lowering loan rates to economic levels. This lowering

⁹ *Op. cit.*, p. 750.

might be done just on the basis of common sense economics, as in the case of the lowering of the hog price floors that took place in 1943 and 1945, or by some formula such as a 1 percent reduction in rates for each 1 percent by which year-end stocks of corn exceeded the size required for stabilization purposes—say one billion bushels.

Eventually this would bring the corn to something like the right economic levels. This would make it easier to set the price floors for livestock at proper levels. They would be set at the ratios to corn prices that would induce the production of the quantities of each kind of livestock that would move into consumption at those prices. The same thing is true of dairy and other livestock products.

The loan rates for cotton and other export crops would eventually be set in relation to export price levels. Thus the loan rates and prices for most farm products could be set by fairly objective measures. The prices for fresh fruits and vegetables would remain as the most difficult to handle.

Supporting Prices or Incomes against a Major Decline in Demand

Price supports are not good measures for meeting a major decline in general demand. In the case of durable products, the severity and duration of the decline in demand is unpredictable, and there is very little basis for estimating how much of the commodity to carry and how long to carry it. It is difficult to support the prices of perishable products without paying large subsidies to processors, which are unpopular. And holding up the prices of food would accentuate the difficulties of low-income consumers in times of depression.

The way to deal with a decline in general demand is first of all to do everything that can be done, by measures affecting the whole economy, to keep the decline from happening in the first place. Next, to have nutritional programs like the Food Stamp Program ready to go into effect to reduce the decline in the demand for food among low-income groups. And third, if a decline still takes place in spite of these measures, to let prices go on down so as to keep products moving into consumption, but to prevent farm income from declining proportionally by making direct payments to farmers. Their markets would have gone to pieces through no fault

of their own, and they would need depression compensation much as industrial workers need unemployment compensation.

Basis for payments. What basis should be adopted for determining the amount and time of these depression payments?

It seems to me that the objective of stabilizing agricultural income against a decline in general demand could best be attained by using as the basis the thing that is to be stabilized—the net income per farm worker—that is, total income minus all production expenses. And this net income should be stabilized at long-time equilibrium levels, not above those levels; otherwise we repeat the mistakes, with income, that price raisers make when they boost prices above equilibrium levels.

These per capita farm net income data for agriculture are already available in official BAE statistics running back to 1910. They have been subjected to much criticism, but if the need were great enough they could be improved. These net income data would be a better basis than Norton and Working's gross income minus the cost of feed and livestock purchased, because they would take all expenses into account, not just feed and livestock expenses. And they would be better than Waugh or Schultz' price bases, because they would take expenses as well as gross income into account, not just prices per unit of products sold, which would not even measure gross income, much less net income.

If net income per farm were adopted as the basis for making direct payments to farmers in periods of low general demand, two questions would need to be answered.

1. *What are the "long-time equilibrium levels" that are to be used as the basis for stabilizing net agricultural income per capita?*

Norton and Working propose using the average or trend relation, over a period of years in the past, using their particular concept of net income. They propose this as the basis for deciding when to make production payments, and how much to pay. In their view, production payments should be made whenever the per capita farm net income falls below its average relation to per capita non-farm net income. And the payments should be made in amounts that will bring the relation up to average.

An average of this sort probably is one of the best rules-of-thumb available, but it still remains only a rule-of-thumb. The average of the past is only an imperfect guide to the needs of the future. In this case, it would provide a form of income parity, subject to some

of the same shortcomings that have been pointed out for price parity. We ought to get away from historical bases entirely and use a current base each year, computed by reference to current, not historical, data. This base should be such as would accomplish two things (1) provide an adequate income for farmers each year, as determined by reference to objective standards of living, and (2) allocate resources properly between agriculture and the rest of the economy, so as to equalize marginal returns, and thus move the proper number of farmers off farms and into other pursuits. Agriculture produces nearly 50 percent more farmers than necessary to maintain a stationary farm population. Thus surplus must keep moving into other lines of production, or the increased numbers of farmers will cut the total farm income pie into smaller and smaller pieces.

Obviously, a base of this sort cannot be worked out by any simple arithmetic formula. Some simple rule-of-thumb, such as the average over a recent period, can be used until a better one can be worked out, but it is at most only a stop-gap. Economists could well make this particular problem a major field for future research.

2. *Basis of payments to individual farmers.*

The second question is this: On what basis are the payments to be made to individual farmers?

In principle, they should be made on the same basis as the basis used for determining the time and amount of the total payment to agriculture as a whole, as outlined in the preceding section—that is, per capita net income. This would bring each farmer's net income up to its proper relation to per capita non-farm net income.

This principle is easier to enunciate than to put into practice. It would be administratively very difficult, if not impossible, to determine the net income for each farm separately and bring it up to par, farm by farm.

Payments proportional to total sales. There are two workable alternative bases for these direct payments. Under the first one, the payment would be made proportionate to total sales on each farm. Each farmer then would be paid a uniform percentage of his gross income. Thus in a year when agricultural per capita net income was 20 percent below average, it could be brought up to average by adding, say, 8 percent to the gross income (net income averages about $\frac{2}{5}$ of gross income). So each farmer would receive a production payment equal to 8 percent of his gross income as determined by his records of sales.

With this plan, as with all direct-payment plans, some administrative difficulties would be encountered in the case of livestock feeds. If farmers were to receive direct payments for corn as well as for hogs, it would be difficult to distinguish between bona fide local sales of corn among neighbors, from sales made purely to establish a claim for payments. Local committees to certify the basis of the payments would help to meet this problem.

This plan would help to keep the nation's commercial farmers on an even keel, but it would not be much help to the small, almost non-commercial farmers, who number nearly half of the total agricultural population but produce only about 10 percent of total agricultural production. The plan would concentrate attention on farm business needs. It would make payments proportional to the size of the business, much as the open market does.

Uniform flat payment. The other alternative would concentrate attention on the farm family rather than the farm business. It would recognize that a farmer has a family to support as well as a business to operate. Under this plan a uniform flat payment would be made to each farmer, regardless of the size of his business. This would be a standard of living payment, analogous to unemployment compensation.

The shortcomings of this extreme basis are fairly obvious. It would take care of family needs, which would be of a similar order of magnitude from farm to farm, but it would be quite an inadequate means of meeting the needs of the farm business. A flat payment of, say \$200 to each farmer would be more cash income than a good many hill-billies had ever seen before, yet it would be only a drop in the bucket to meet the needs of large commercial family sized farms. Many of them would be facing business operating losses of hundreds of dollars.

Payments proportional to sales preferable to uniform payments. On the whole, payments proportional to total sales appear preferable to uniform payments. Individual farmers' incomes differ greatly from farmer to farmer in normal times. The basic purpose is to stabilize these incomes at something like their normal levels, not to alter the income distribution pattern in the direction of greater uniformity. If such an alteration is desirable, it should be done as a separate national plan applied to all groups, industrial, commercial, professional, etc., as well as agricultural.

This program would keep per capita net farm income up to its average relation to non-farm income, and reduce financial losses

and human hardship; yet it would leave the relative prices of farm products free to direct production and consumption and avoid the piling up of unsaleable surpluses that resulted from the price control programs of the 1930's and 1940's.

This sort of program may not be able to meet both of the two criteria given above—the equitable allocation of resources and the provision of a decent living. The base that properly allocates resources may well turn out to be too low to provide enough income to many farmers to meet objective living standards. If so, further measures will be required, directed primarily at the farmers concerned, and only indirectly at the other farmers whose incomes are adequate for a decent living. There is really only one workable way to bring those low farm incomes up, over a period of years. Educational and health facilities need to be provided to raise agricultural productivity per man, and keep open the channels out of agriculture into other industries, by reducing handicaps to free movement to those industries. If this movement could be made completely free, incomes for given grades of ability in agriculture would rise to equality or parity with incomes for equal ability in other lines.

A final and essential part of an agricultural price and income policy, therefore, should be a program of general improvement in educational facilities for farm girls and boys at all levels—grade school, high school, and college—including technical training as well as general education, so that farm boys and girls can compete on equal terms with boys and girls in town, and move out of agriculture until returns in agriculture rise to equality with those in other lines.

MODERNIZATION OF CHINESE AGRICULTURE

P. W. Tsou

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CHINA is preponderantly an agricultural country. Over 70 percent of her total population are engaged in farming. In 1936, one year before the outbreak of the war, 80 percent of her total exports consisted of agricultural commodities, which were valued at U. S. \$167,000,000. Her imports of agricultural goods that same year amounted to U. S. \$66,000,000, constituting 24 percent of her total imports. These figures clearly indicate that before the war, China's most important enterprise was agriculture. Now that the war is over and China has come out of it victorious, she will undoubtedly be industrialized. But it can be presumed almost certain that agriculture will remain the most important enterprise of China, that it will contribute most to ensure the people freedom from want and to raise the living standards and cultural levels of the rural population.

Furthermore, the success of China's industrial development, which is now being vigorously encouraged, will depend to a great extent upon the progress of agriculture. First, inasmuch as agricultural exports amount to 80 percent of China's total exports, the logical way to provide means of paying for the importation of the capital goods required in her industrialization program is to increase agricultural production and exports. Secondly, inasmuch as it will be very difficult for China's infant industries to compete in foreign markets, foreign loans contracted for the purchase of machinery will also ultimately depend upon expanded agricultural exports. Last, but not least, since the farmers of China form the great majority of her potential domestic consumers, it is essential that their low purchasing power be increased so that the home industries will have an adequate domestic market.

It is gratifying to say that this situation is now generally recognized in China. For instance, in the Sixth Plenary Session of the Kuomintang Congress, held in the fall of 1945, a declaration of policy was promulgated which placed equal emphasis on agricultural and industrial development. From this declaration, we can see that those who are assuming the helm of state have determined to launch new and effective measures for the development of agriculture. In order to attain this development, however, we have to have a program, and this should be designed to cover at least four

main topics: namely, policies and plans, organization, personnel, and finance. Plans must be made according to the policies decided upon, and the plans, in turn, will determine the requirements for organization, personnel, and appropriation of funds. These are the four phases of the whole program. While they are interrelated and interwoven, they will be discussed separately in the following pages.

Policies and Plans

If Chinese agriculture is to be developed, there are three policies which must be adopted as guiding principles. These policies are:

1. Full development and use of agricultural resources.
2. Increase of farmers' income.
3. Expansion of export trade.

Policy for Full Development and Use of Agricultural Resources

China is a nation which covers an area of 4,479,000 square miles, with various kinds of land and with a great variety of soils. The latitudes of China cover almost all kinds of climatic regions, from subarctic to tropic. With the exception of a few tropical crops, practically all kinds of plants may be found or grown in China. Her natural endowments are so rich that she can easily meet the requirements for most of her needs in agriculture.

During the next twenty years, China will have to buy large quantities of machinery from abroad to carry out her industrialization program and to build up a system of internal and external transportation. Any increase in agricultural imports will cause a corresponding decrease in her ability to import industrial goods. From 1935 to 1937, China imported machinery and parts valued at U. S. \$29,988,000, whereas during 1936 alone, the agricultural commodities imported amounted to U. S. \$66,000,000. Such a condition must not be permitted to prevail again while China is in the process of being industrialized. Efforts should be made to maintain her agricultural exports at a minimum of U. S. \$600,000,000 per year, at the same time increasing her imports of machinery and parts to at least ten times that of the pre-1937 figure. From the standpoint of China's industrialization program, it is all the more important that she endeavor to reach the goal at which most of her agricultural needs will be met by herself.

Policy for Increase of Farmers' Income

One of the first and foremost needs of Chinese farm families is purchasing power. This purchasing power is directly related to the yearly income of farm workers. According to a prewar survey conducted by specialists, the male farm worker in China had an average annual income of only U. S. \$43, of which he spent \$38 for food. He had only \$5.00 left to cover all his other expenses. At that time in the United States, the male farm worker had an average annual income of \$765, of which he spent \$163 for food, leaving \$602 for other expenses. What a great difference in economic strength between the two nations! It is, therefore, imperative that the Chinese government take immediate steps to raise the farmers from this destitute condition of bare subsistence. If their income is not materially increased, it will be extremely difficult to improve rural life or to promote any cultural activities in rural communities.

Policy for Expansion of Export Trade

As has been mentioned above, 80 percent of China's exports were made up of agricultural products, and agricultural exports are likely to predominate over others during the next twenty years. Unlike the supply of mineral ores, which is limited and exhaustible, agricultural products are renewable, and their quality and quantity can be improved by the use of scientific methods. Hence, expanding the export trade through improvement of agriculture must be one of China's three agricultural policies.

When policies have been adopted, they should be carried out through well planned projects or plans. While policies are more or less fixed, at least for a definite period of time, plans or projects should be flexible so that they may be adapted to changing conditions. In order to inaugurate the policies as defined above, a number of plans in various fields of development are here suggested. This list of plans is by no means exhaustive, and the details of each plan need to be worked out by specialists.

A. *Land Utilization and Soil Conservation Plan.*—The land of the whole country ought to be classified into forest land, pasture land, and crop land according to topography, soil characteristics, and condition of erosion so that each type can be fully utilized. It is to be noted that Chinese farmers have been using all possible land for food, and have neglected organized, large-scale soil conservation.

As a result, erosion has changed many once fertile fields into barren wastes in spite of efforts to control erosion on individual holdings. To prevent recurrence of such irreparable loss, sound soil conservation practices must be faithfully followed. Forest lands and pasture lands should be used for forestry and grazing, respectively. Means such as contour cultivation, terracing, strip cropping, water conservation by dry farming, drainage and irrigation projects, green manure, forage crops, and crop rotation methods should be employed to maintain soil fertility and prevent soil erosion on crop lands with gentle slopes.

B. Plan for Increasing Agricultural Land.—The National Agricultural Research Bureau estimated in 1934 that 17 percent of the total area of China was tillable; of this 17 percent, 5 to 6 percent was idle. If we reclaim this idle land, we shall be able to increase the agricultural land by 40 to 50 percent. Furthermore, if people are encouraged to use public cemeteries, a good deal of additional farm land now wasted as burying grounds can be reclaimed.

C. Plan for Increasing the Production-Per-Unit Area.—This plan includes four projects: namely, improvement of seeds, improvement of cultivation methods, improvement of fertilizers and soils, and control of insects and diseases. Any of these projects, when successfully developed, are capable of increasing the production-per-unit area by 10 to 30 percent, or even more. As large as were the annual imports of rice and wheat before World War II, they never exceeded 10 percent of China's own production. If the yield of rice and wheat per acre is increased by 30 percent, self-sufficiency in grains can be attained even when a part of the present grain acreage is shifted to other crops.

D. Plan for the Development of Animal Husbandry.—The development of animal husbandry depends primarily upon expansion of pasturelands and increased production of feedstuffs. In those parts of China where the land is mountainous, much sloping land should be extensively seeded with grasses and legumes. Natural grazing land should be improved and properly managed. At the same time, superior breeds of cattle, goats, and sheep for milk, meat and wool production should be developed along with superior breeds of chickens, ducks, geese, and turkeys. Great emphasis should be laid on veterinary science in order to combat the tremendous loss due to animal diseases.

E. Plan for Afforestation.—Forests serve not only to conserve the

water supply, but also to supply raw materials for three important necessities in civilization: namely, housing construction, textiles, and paper. Forestry has been neglected in China all through the past two thousand years; the few remaining natural forests must be protected from further abuse. Meanwhile, national, provincial, and public forests and farm woods should be developed, and all land with a slope steeper than a specified grade should be designated as forest land.

Forests also add beauty to the land. The many scenic sites in China should be forested and reserved for national, provincial, and hsien (county) parks in order to provide recreational facilities for the people and to promote tourist industries.

F. *Plan for the Development of Fisheries.*—China has a coast line about 5,000 miles long, she has many fishing centers along the Yangtze, Ming, West, and Sungari Rivers and on various lakes, and the quantity of production is relatively free of climatic restrictions. Her fishing industry can prosper if ships, fishing equipment, and good technical assistance are made available. In that way, a part of China's coastal population can find new employment, leaving more land per capita at the disposal of the farmers, and the marine products thus obtained will contribute considerably to raising the nutrition standards of the people.

Inland lakes, ponds, and rivers should be fully utilized so that fresh water fishery can be developed.

G. *Plan for the Development of Horticulture.*—In order to improve the people's diet and to increase its nutritional value it is urgent that seeds and stocks of vegetables and fruit trees be improved. Their cultivation must be extended, better methods of insect and disease control must be adopted, and methods of processing, storing, packing, and distributing must be studied and reformed.

H. *Plan for Shifting Workers from Agriculture to Industry.*—One hundred fifty years ago, more than three-fourths of the total population of the United States were farmers. Owing to the steady growth of manufacturing industries and service activities and to improvements in the efficiency of agriculture, the percentage of farming people has been gradually reduced. It is now only about 24 percent. China's farm population at the present time is over 70 percent of the total population. Steps must be taken to lower this figure within the next twenty years from 70 to 50 percent.

I. *Plan for the Improvement of Farm Implements.*—More efficient

farm implements are a prerequisite for larger farms. By using improved farm implements, one farmer of ten years from now should be able to do the work of four farmers of today. Wheat harvesting in the United States, for example, was formerly done with a scythe, and each farmer could harvest two acres per day. After 1831, the use of the horse-drawn reaping machine enabled each farmer to handle eight acres per day. With the present power-operated machine in the wheat regions of the United States, he can now harvest 40 acres per day; i.e., twenty times as much as with a scythe. The improvement in other farm implements is comparable. It is, therefore, very important that this plan for improving farm implements should be developed along with other plans.

J. Plan for the Improvement of Agricultural Financing.—Short and long term loans with low interest should be made readily available to each farmer in need of money for purchasing, producing, or marketing purposes.

K. Plan for the Promotion of Cooperative Organizations.—Efforts should be made to encourage farmers to operate cooperatives of all kinds, including those for purchasing, marketing, and other services. This is of vital importance, especially in view of the fact that these cooperatives will not only enable small scale farmers to enjoy the advantages of large scale business enterprise, but will also help cultivate the spirit of solidarity, the spirit of working together.

L. Plan for the Promotion of Rural Industries.—Rural industries help make the cohesion of agriculture and industry possible. There is a great variety of rural industries, such as handicrafts, preserving and processing food, and manufacturing agricultural implements and materials. Any one of these would enable farmers and their families to utilize their spare time and earn some extra money to supplement their regular income.

M. Plan for Increasing Exportable Agricultural Commodities.—It is certain that during the next twenty years, China will have to import machinery of all kinds in great quantities and that she cannot afford to import agricultural commodities. However, mere self-sufficiency in agriculture is not enough; China still must have money to pay for the imported machinery and other industrial goods. Expansion of the export trade by means of agricultural commodities is a matter of very great importance in the national economy. It concerns both industry and agriculture.

An examination of China's exports reveals that the main agri-

cultural commodities sold to foreign countries are cotton, silk, tea, tung oil, and soybeans. China's cotton piece goods have great prospects in the East Indies, Malaya, and other markets, and success depends upon efficiency of machinery and management and upon a steady supply of native raw cotton, which China can easily furnish in abundance. Silk, tea, tung oil, and soybeans will likewise have a bright future in their respective fields. These exports are briefly described below.

1. *Cotton*.—In 1936, China's cotton acreage was 10,000,000 acres, and the yield was 15,000,000 piculs (equivalent to about 110 pounds per acre). That same year, China had 5,000,000 spindles. The present cotton requirement calls for planting 30,000,000 acres, producing 45,000,000 piculs. Two-thirds of the cotton cloth manufactured will be sufficient for domestic requirements; so the other one-third can be exported to other countries. This export will bring a return of U. S. \$400,000,000, or nearly twice the prewar annual export of all commodities.

We might recite here a brief history of the cotton improvement work in China as an encouraging example for other fields of enterprise. In 1919, the agricultural colleges of the National South-eastern University and the University of Nanking, financed by a subsidy from native and foreign cotton firms, started cotton improvement work and the training of personnel. The funds made available yearly to the University of Nanking amounted to \$10,000 (equivalent to U. S. \$3,000) and to the National South-eastern University, \$30,000 (equivalent to U. S. \$9,000). While the immediate results were not great, the work laid the foundation for future progress. Since the creation of the Cotton Control Commission in 1931, the total annual appropriation of the national and provincial governments for cotton improvement has been nearly Ch. \$1,000,000. Several banks willingly made production and marketing loans to cotton farmers. In the course of five years, remarkable success was achieved. In 1931, China imported 5,600,000 piculs of foreign cotton, worth U. S. \$62,000,000; in 1936, in spite of increased spindles, China imported only 306,000 piculs, worth U. S. \$4,700,000. Moreover, she exported during the same year twice the amount imported, worth U. S. \$9,200,000. China had a favorable balance in her cotton trade for the first time in history. As a result of an annual expenditure of Ch. \$1,000,000 for improvement work, several hundred million dollars worth of cotton was pro-

duced. This points out the hopeful outlook for other branches of agricultural work in China.

2. *Silk*.—Sericulture is an age-old occupation in China. According to China's silk specialists, it is possible for China to produce 600,000 piculs of raw silk annually. The following is an estimate of the productivity of the different silk regions:

- a. Kiangsu, Chekiang, and Anhwei—300,000 piculs (prewar figure, 160,000 piculs).
- b. Kwangtung—150,000 piculs (prewar figure, 40,000 piculs).
- c. Szechwan (including Sikang)—60,000 piculs (prewar figure, 40,000 piculs).
- d. Shantung (including Honan)—40,000 piculs (prewar figure, 20,000 piculs).
- e. Sinkiang—10,000 piculs (present figure, 8,000 piculs).
- f. Manchuria—40,000 piculs (mostly from wild silkworms).

Of the total potential production of 600,000 piculs, 300,000 will meet the demands of the domestic market and the other 300,000 piculs will be available for export. Two hundred thousand piculs could be sold in the United States and 100,000 piculs in Europe, Malaya, and the East Indies. The export will bring a return of U. S. \$100,000,000 or more.

3. *Tea*.—China's tea export monopolized the world trade from the 17th century until the end of the 19th century. In 1880, tea export reached a peak of 279,000,000 pounds and was one of China's major export commodities. Since that time, however, her tea export trade slumped sharply because of competition from the new tea producing countries such as India, Ceylon, and the East Indies, which made continual efforts to improve their produce. In 1920, China's tea export hit a low mark of 40,000,000 pounds, then it recovered somewhat to reach an average pre-World War II figure of 80,000,000 pounds, less than 10 percent of the world's total tea export trade.

The end of the war now offers us a propitious moment to recover China's tea market abroad. Formosa, which exported 20,000,000 pounds annually before the war, is once more a part of China. China should experience no great difficulty in recovering exports up to 200,000,000 pounds per year within five years. Figuring on a price of U. S. \$0.30 per pound, this will bring a return of \$60,000,000, which will help China pay for her industrialization program.

4. *Tung Oil.*—Tung oil has been one of China's major export commodities. Of late, there has been doubt regarding its future as an export item for two reasons: (1) Tung tree culture in the United States has met with success, and production of tung oil there is on the increase. Tung tree culture is also being promoted in other countries, including Australia, New Zealand, and Burma. (2) There is a growing tendency to use in place of tung oil other oils, such as Oiticica oil, soybean oil, castor oil, etc.

However, after having made a first-hand inquiry in the United States, the author is of the opinion that tung tree culture in that country is still in the experimental stage, that it will take many years before the United States can produce enough tung oil to meet its own needs, and that there is no satisfactory substitute at the present time for tung oil in the paint and varnish industry. He also found that production of Oiticica oil is insignificant, soybean oil is unsatisfactory, and linseed oil is too high in price.

Tung oil has not been used in maximum amounts in America and Europe. The United States formerly received about 75 percent of the tung oil exported from China, which averaged about 120,000,000 pounds a year at a value of 20 to 25 million dollars. At the present time, the United States can use 500,000,000 pounds per year at the normal price of \$0.15 per pound.

5. *Soybeans.*—The soybean is used in China as food, feed, and fertilizer. It is used in the United States as food, feed, and industrial raw material in a great variety of manufacturing pursuits. In 1932, China's exports of soybean and soybean oil amounted to about U. S. \$23,000,000. If we can improve the seed and perfect cultural methods adaptable to different regions, such as the Northeastern provinces, the Yellow River Basin, and the Yangtze Valley, not only will the soybean continue to be an important item in export trade, but it will also become a precious source of industrial raw material for domestic consumption.

Organization

To realize the plans listed above, China needs streamlined organizations which will enable her to handle efficiently such matters as agricultural administration, agricultural research, agricultural education, agricultural extension, agricultural regulation and control, and agricultural credit. These organizations should function

as integral units of the national, provincial, and local governments with properly delegated authority and with clearly defined duties and responsibilities assigned to each of them.

Six proposals are offered to carry out this matter of organization; viz., division of China's land into agricultural regions, reorganization of the present Ministry of Agriculture and Forestry, establishment of national agricultural colleges, organization of a national farm bank, organization of provincial commissions for agriculture and forestry, and organization of hsien (county) agricultural extension agencies.

I. *Division into Agricultural Regions*

Including Manchuria and Formosa, China is now made up of thirty-five provinces. If each province had its own agricultural program, there would not be sufficient personnel for allocation to so many units. Moreover, a larger number of units calls for a greater total appropriation and would be less efficient. It is, therefore, better to divide the entire country into eight farm regions according to the natural boundaries with respect to agricultural production. Each of these regions may include several provinces. The following organizations should be established in each region:

1. A National Agricultural College;
2. A National Agricultural Experiment Station;
3. A National Agricultural Extension Bureau, equipped with a broadcasting station;
4. National Agricultural Library; and
5. A branch of the National Farm Bank.

These five organizations should be located in the same town or city, which would serve as the agricultural headquarters of the region. A number of farmers' representatives and agricultural leaders should be invited to form a regional council for the promotion of closer cooperation between the government and the farmers. At the regular meetings of this council, the members could examine the work done by the five regional agricultural organizations in order to offer constructive criticism and to make recommendations to the National Government.

The following is a tentative suggestion as to the areas to be covered by each of the eight regions and the names of cities to be designated as headquarters:

1. Northeastern Region, with headquarters at Mukden, Liaoning.
2. Yellow River Plain Region (including the five provinces of Chahar, Hopei, Honan, Shantung, and Shansi), with headquarters at Peiping.
3. Yellow River Plateau Region (including the five provinces of Suiyuan, Ningshia, Kansu, Shensi, and Chinghai), with headquarters at Sian, Shensi).
4. Sinkiang-Tibet Region, with headquarters at Tihwa, Sinkiang.
5. Lower Yangtze Region (including the three provinces of Kiangsu, Chekiang, and Anhwei), with headquarters at Nanking.
6. Yangtze River Lake Region (including the three provinces of Hupeh, Hunan, and Kiangsi), with headquarters at Wuchang, Hupeh.
7. Southeastern Coastal Region (including the four provinces of Kwangtung, Kwangsi, Fukien, and Formosa), with headquarters at Canton, Kwangtung.
8. Southeastern Region (including the four provinces of Szechwan, Sikang, Yunnan, and Kweichow), with headquarters at Chengtu, Szechwan.

II. *Reorganization of the Ministry of Agriculture and Forestry*

Under the present organization, the Ministry directs its principal attention to clerical details, whereas it should direct its principal attention to agricultural projects. The reorganized Ministry would set up six departments; viz., Department of General Affairs, Department of Agricultural Extension, Department of Agricultural Regulation and Control, Department of Agricultural Economics, National Agricultural Experiment Station (with eight branch stations), and National Agricultural Library (with eight branch libraries).

A. *Department of General Affairs.*—This department would deal with personnel and operation of plants; work out the budget and keep records and accounts; issue documents; and take care of other matters not handled by the other departments.

B. *Department of Agricultural Extension.*—This department would be in charge of affairs related to agricultural extension. It can be formed by reorganizing the present National Extension Com-

mission of the Ministry of Agriculture and Forestry. The important phases of extension work are:

1. Land utilization,—including soil surveys, soil conservation, and irrigation and drainage engineering.
2. Crops,—including crops, horticulture, insect and disease control, agricultural chemistry, and fertilizers.
3. Forestry,—including national, provincial, public, and farm woods and their protection and utilization.
4. Fishing and livestock,—including marine and fresh water products, animal husbandry, veterinary science, and sericulture.
5. Information service,—including publications, movies, radio broadcasting, and demonstrations.
6. Boys and girls club work and other community services directly related to the spread of agricultural knowledge.

This department would be in direct contact with the agricultural extension bureaus in each of the eight regions.

C. *Department of Agricultural Regulation and Control.*—This department would take charge of inspecting agricultural commodities for export and import and would take charge of inspecting agricultural commodities for inter-provincial trade. The purpose of the inspection is the abolition of adulteration practices and the establishment of uniform grades. Inspection offices should be established at the coastal ports, including Shanghai, Canton, Tsingtao, Tientsin, Dairen, and Port Arthur, and at inland ports such as Hankow, Wuchow, Changsha, Chengchow, and Hsuchow.

D. *Department of Agricultural Economics.*—This department would undertake research projects connected with the marketing of agricultural products, price indexes, agricultural cooperatives, agricultural finance, farm management, tenant relations, land utilization, and agricultural policies. It would also take charge of China's agricultural census and statistics, agricultural marketing, and crop estimates in cooperation with the agricultural economics sections of the provincial commissions of agriculture and the agricultural economics departments of national agricultural colleges.

E. *National Agricultural Experiment Station.*—The National Agricultural Experiment Station and the eight branch stations would be charged with the responsibility for finding solutions to the technical problems which arise in connection with Chinese agri-

culture. The National Station would make plans for all investigations in land utilization, farm practices, forestry, fishing, and animal husbandry, while the branch stations would undertake general agricultural investigations of special interest to the particular regions; e.g., investigations of wheat, apples, and beets in the north, investigations of rice, oranges, and sugar cane in the south, of fishing in the coastal and lake regions, and of animal husbandry, forest management, and soil and water conservation in the hill and mountain country. The National Agricultural Experiment Station would maintain close coordination with the Department of Agricultural Extension. Branch stations would set up as many substations as solution of special problems might require.

With such a central organization, the Ministry of Agriculture and Forestry would take over the whole burden of research work in connection with Chinese agriculture, thereby promoting economy in personnel and finance.

F. *National Agricultural Library.*—The National Library and the eight branch libraries would be charged with the responsibility of collecting agricultural reference material and making it accessible to all agricultural organizations and individuals.

III. *Organization of National Agricultural Colleges*

There should be established eight national agricultural colleges, one in each agricultural region. The aim of these colleges would be the training of personnel urgently needed for the development of agriculture in each region. These colleges might conduct undergraduate courses and grant bachelors' degrees to persons intending to work in agricultural extension, general agricultural administration, or technical agricultural work; they might also organize graduate schools for the training of research workers of advanced standing and grant advanced degrees to the students.

Besides these colleges, there should be young farmers' schools, to be established through the hsien (county) agricultural extension agencies but to be under the guidance of the rural education departments of these colleges. The latter would be responsible for the preparation of teaching material for the schools. The head of the hsien extension agency would serve as the principal of the school and his assistants as teachers. Each year, one or two students with outstanding natural endowments would be awarded scholarships for further education in primary school, middle school, and agri-

cultural college. By this method, we hope to bring up future agricultural leadership from the grassroots.

IV. Organization of a National Farm Bank

It is very important that there be a national farm credit institution, which may be operated under the jurisdiction of the Department of the Treasury, as in Canada, or under the jurisdiction of the Department of Agriculture, as in the United States. In China, the Farmers' Bank of China serves as this kind of institution. It is being operated under the jurisdiction of the Ministry of Finance, which seems to be a satisfactory arrangement. However, a few agricultural leaders should be included on the Board of Directors which formulates the bank's policies, and the head of the Department of Agricultural Economics under the Ministry of Agriculture and Forestry should be made an ex-officio member of the Board to insure close coordination between the Ministry and the agricultural credit institution. In the meantime, a regional branch bank should be established in each of the eight agricultural regions and a provincial bank in each province in order to promote close cooperation between the bank and other agricultural organizations as herein proposed.

We learned from the United States that the Farm Credit Administration loans outstanding at the end of 1943 amounted to \$4,432,000,000, whereas the insurance company and commercial bank loans outstanding as of the same date were several times larger than the Farm Credit Administration figure. This fact indicates that the United States government wishes to encourage private financial organizations to take active part in the field of farm credit.

In Canada, this tendency is even more obvious. One of the laws proposed last year in the Canadian Parliament was designed to make agricultural intermediate credit the business of private banks exclusively. Under certain conditions, that government even guarantees payment of principal and interest.

In view of the fact that the demand for credit in rural China is so great that the Government will find it difficult to cope with the situation single-handedly, it is very important that this principle of encouraging private banks to participate actively in farm credit should be adopted in China.

V. Organization of Provincial Agricultural and Forestry Commission

Every effort should be made to induce the individual provincial governments to create a provincial commission of agriculture and forestry, which would serve as a link between the central government and local governments. The structure of the provincial commission would be similar to that of the Ministry of Agriculture and Forestry in the National Government except that the division in charge of research work is to be omitted. It, therefore, should consist of four sections, as follows:

1. General Affairs Section (in charge of general administration).
2. Agricultural Extension Section (in charge of extension work).
3. Agricultural Production Control Section (in charge of inspections and other control measures).
4. Agricultural Economics Section (in charge of matters related to census, statistics, prices, and other economic problems).

VI. Organization of Hsien Agricultural Extension Agencies

The agricultural administration of the hsien government should center around extension work; there should be an agricultural extension agency in each hsien. This agency would be headed by a chief agent, who would direct five to ten assistants. All of them should be graduates of agricultural colleges and should have received special training in extension work.

These hsien extension workers should seek a closer relationship between pure research and practical application, should evaluate the techniques and methods which have hitherto been adopted in rural areas, and should spread the good results already achieved for the benefit of a still larger number of people. They are to be friends of the farmers, and they will be there to help farmers who help themselves.

Personnel

Like any other professional group, agricultural workers in China need adequate preparation and sufficient training in order to discharge their duties and responsibilities properly and efficiently.

According to statistics gathered by the University of Nanking, the number of graduates from China's agricultural colleges and agricultural technical schools over the past forty years does not exceed 5,000. Of these 5,000, at least 50 percent have died or

changed occupation. Students who have studied in agricultural colleges abroad number around 800, and most of them studied in the United States. The author personally made a survey in the United States a year ago and found that 375 Chinese students studied agriculture in America during the last forty years. Assuming that 50 percent have died or changed occupation, there are only 180 of those persons available now.

The following is an estimate of the number of persons needed to develop agriculture in China as proposed in the foregoing program:

A. Research workers and professors.....	8,800
1. National Agricultural Experiment Station.....	600
2. Eight branch stations.....	1,600
3. Eight National Agricultural Colleges.....	1,600
B. Administrative staff members.....	4,500
C. Agricultural economics personnel (national & provincial).....	2,000
D. Hsien agricultural extension agents (five per hsien).....	10,000

Thus, the total number of persons needed is 20,300. Assuming that the national agricultural colleges recruit their faculty staffs from persons trained abroad, these persons will form a sort of nuclei in the different agricultural regions. In the course of time, these nuclei will produce more and more trained agricultural workers. Supposing that each of these eight colleges can turn out 200 graduates per year, within ten years we shall have 16,000 new workers in addition to the workers available now. Hence, so far as personnel is concerned, it is quite possible that ten years from now we shall be able to meet the requirements for carrying out the agricultural program suggested.

Funds

Before we speak about funds for developing agriculture in China, perhaps it will be enlightening to review briefly how funds were supplied in America for similar purposes. It is recorded that the United States government made its first appropriation for agricultural development in 1839. The amount was \$1,000. And that was used by the Patent Office for collecting agricultural seeds. In 1862, a separate Bureau of Agriculture was established. It was given an appropriation of \$64,000. In 1889, the Bureau was expanded to become the Department of Agriculture, and its chief official was accorded the rank of cabinet member. The annual appropriation reached \$2,000,000. In 1907, it was \$11,000,000; in 1932, \$94,000,000; in 1933, \$220,000,000. During the last five years, an-

nual federal expenditures for agricultural development were in excess of \$1,000,000,000, and the state expenditures were around \$286,000,000. But the amount of increased production obtained as a result of these expenditures was "hundred fold." For instance, the money expended on agricultural research averaged \$40,000,000 per year, while the increased production resulting from the invention of hybrid corn seeds alone amounted to \$400,000,000 per year, more than ten times the expenditure on agricultural research.

In China, the money spent on agricultural development has been consistently small. Before 1927, the amount per year made available to a national agricultural experiment station or to an agricultural college was not more than a few tens of thousands of Chinese dollars. From 1927 to 1937, the amount was increased to a few hundred thousand dollars. The largest share of these funds was allocated to the promotion of cotton culture by the Cotton Control Commission. It is gratifying to note that the greatest accomplishments were made in cotton work. Recently the total annual appropriation of the national and provincial governments for agricultural development has been about three million Chinese dollars of the prewar exchange value. This amount should be increased thirty-fold, and this increased amount should be allocated as follows:

I. Agricultural Administration and Control Fund	
Ministry of Agriculture and Forestry.....	\$ 4,000,000
(Provincial Commissions of Agriculture should be provided with provincial funds under their respective budgets.)	
II. Agricultural Extension Fund	
National.....	3,000,000
Provincial (\$500,000 per province).....	17,500,000
Hsien (\$20,000 per hsien).....	40,000,000
III. Research Fund	
National Agricultural Experiment Station.....	6,000,000
Eight branch stations (\$8,000,000 each).....	24,000,000
IV. Library Fund	
National Agricultural Library.....	500,000
Eight branch libraries.....	2,000,000
Total.....	\$97,000,000

The amount indicated above does not include funds for agricultural colleges, because funds for national colleges are to come from the appropriation made to the Ministry of Education.

Since the agricultural organizations will be built up gradually with the increase of available personnel, appropriation of funds will be made accordingly. It is estimated that in the first year, the ap-

propriation will be in the neighborhood of \$37,750,000. The full amount of \$97,000,000 may not be appropriated until the tenth year.

Agricultural development is an integral part of national reconstruction. As such, its problems are not economic only, but social and cultural as well, intricately related to the problems of the entire nation and indirectly to the problems of the whole world. This task calls for patience and wisdom in the execution of its programs. It requires continuously renewed efforts, and it should be carried out on the basis of cooperation between the state and the individual, between the central, the provincial, and the local (hsien) governments, by men and women who are willing to consecrate their lives to a task of unparalleled significance.

FOOD CONSUMPTION AT THE NATIONAL LEVEL

CHARLES B. HOWE

Production and Marketing Administration

"The first essential of a decent standard of living is the provision to all men of those primary necessities which are required to promote freedom from disease and for the attainment of good health; (and) the most fundamental of these necessities is adequate food." Thus concluded the assembled nations at the United Nations Conference on Food and Agriculture not so long ago. Scarcely concealed in this conclusion is the underlying inference that all men do not ordinarily have adequate food. There is abundant evidence, it is true, to establish the proposition that not all persons in each country of the world have adequate food. But can it be said with equal assurance that in prewar times there were likewise whole nations without adequate food?¹

Our emotions tell us the answer must be in the affirmative. We know that the kind of foods eaten in various parts of the world are not the same. We, in this country, instinctively are certain that bird nests, rice, mare's milk, black bread, olive oil, and so on cannot represent adequate food, whereas such things as meat, sugar, vegetables, dairy products (or whatever we personally eat) unquestionably do. We are supremely confident that any country which lives on a limited variety of food, even though these are foods toward which we have no pronounced antipathy, must have inadequate food. Finally, we feel there is little doubt that any country which fails to eat as many pounds of food in the aggregate as we do must have inadequate food. In short, adequate food in prewar years may easily come to mean to us a food pattern such as that with which we are familiar.

If it ever becomes possible wholly to quiet our emotions with respect to the different things that others insist upon eating, it will be apparent that this kind of evidence of food inadequacy must be misleading; we shall recognize at least that this may be a case where the view depends upon the point of view. Obviously considerations of this kind can lead only to superficial judgments of the adequacy of a nation's food supply.

¹ The views presented herewith, which are concerned only with the prewar situation, are those of the author and not necessarily those of the U. S. Department of Agriculture. The assistance of Nancy Crenshaw, Gertrude Gronbeck, and Mary Grigg is acknowledged.

The Evidence

What then is the evidence that will fully answer the question: How adequate is the food supply of each country of the world? It is evidence of three quite different kinds (1) an accounting showing the quantity of each kind of food eaten, (2) the nutritive values for each such food, and (3) appropriate yardsticks against which to measure the nutritional adequacy of each nation's food consumption.

The search for information that would bear on the first point produced some results. For a few countries, a fair picture was obtained of the quantity of each kind of food eaten, but for others the data were wholly inadequate, and for large sections of the globe there were scarcely none at all. As to the second and third points: for a few countries a beginning has been made in the analysis of the more common foods and in the derivation of a nutritive yardstick for the nation. But it is only a beginning. In all, it must be admitted that for most countries of the world, which are those which embrace by far the larger part of the world's population, we do not yet know how adequate are their annual prewar food supplies.

The four tables that appear later illustrate the kind of information concerning a nation's prewar per capita food consumption that can be assembled. They tell the story so far as it has now been compiled, but perchance they tell it only in terms of calories, for as to minerals and vitamins the record at the national level is largely silent. These data come from a variety of sources and so it may be taken for granted that they are not wholly comparable. Those that appear to be most comparable have been brought together within a single table. The figures for the United Kingdom, Canada, and the United States unquestionably are the most accurate, and yet there is an important lack of uniformity with respect to individual foods. In turning to the less familiar countries we do not know the answer to such a simple question as, How big is a hog and what part is lean, what part is fat, and what part squeal? Vegetables, except potatoes, and fruits could be enumerated only in a few instances. Very little is available on farm-grown, farm-consumed foods, and this constitutes a most serious omission in the case of essentially rural nations.

All data here represent food at some point in the usual trade channels; some represent quantities at the farm, some at the point of retail sale, but none portray the amount of food actually in-

gested. Whether the addition of the omitted foods will offset the weight which has to be deducted to reduce these figures to amounts ingested is not known. In short, while some of these materials represent an excellent first approximation, some are exceedingly rough and preliminary. The enforced omission of the larger number of countries of the world brings out conspicuously how small a beginning has been made.

Evidence Inadequate

It is evident that following this approach, the physical and the monetary tasks of gathering the vast amount of data needed to calculate the plane of nutrition of each of the many nations of the world are truly herculean. In this country, where literally millions of dollars and man hours already have been spent, the task is not yet completed. In many countries it has yet to begin.

A long time will lapse, it would appear, before statistical materials can be brought together with which to make a competent assessment of the national plane of nutrition during peacetimes of each of the countries of the world. Nonetheless, it has been urged that world-wide programs be set in motion to provide underprivileged nations with adequate food. Presumably, such proposals will meet with enough popular approval to result, in time, in programs of this kind. In this event, those who work in this field will be called upon to identify surely which are the underfed nations. With millions of dollars at stake the future of the movement promises to hinge upon reasonably correct identification.

An Alternative Approach

If there is little prospect of establishing soon, by the methods sketched above, the plane of nutrition in peace times of each of the countries of the globe, and if world-wide nutritional programs are imminent, then there is great need to devise some short-cut method that will serve, at least for a time. From the fragmentary materials now at hand, it appears that the national plane of nutrition of the countries of the world intrinsically is not the same. Accordingly it may be possible to shape up an over-all pattern on which could be located the position of those countries about which something is now known. From the characteristics which seem to govern the food consumption of these few nations from which statistical materials are available and from any other pertinent evidence there may be

TABLE I. ESTIMATED PREWAR PER CAPITA SUPPLY OF FOOD IN TERMS OF AVAILABLE CALORIES PER DAY
BY TYPES OF FOOD, IN EUROPEAN COUNTRIES

Type of food	Greece	Poland	Italy	Rumania	Yugoslavia	Czechoslovakia	Netherlands	Belgium	Hungary	Austria	France	Germany	Norway	USSR	Finland	Denmark	
Grain	1,383	1,082	1,533	1,835	1,949	1,211	988	1,149	2,144	1,631	1,335	1,121	1,165	1,031	2,134	1,304	931
Potatoes	97	534	73	89	105	267	208	299	23	178	151	297	313	187	303	324	199
Milk (liquid whole)	78	176	102	109	116	193	203	113	165	134	312	161	175	272	115	458	303
Cheese (full cream)	58	40	10	30	64	98	5	5	98	95	45	42	51	255	8	50	
Meats	79	144	86	100	98	217	270	269	191	216	322	295	287	207	81	255	406
Fish	12	4	13	5	1	4	49	34	2	8	25	31	31	131	31	24	44
Eggs	19	17	31	20	16	32	38	18	36	29	36	340	306	582	11	97	
Fats	400	198	251	144	126	356	466	436	181	367	340	306	241	263	384	153	611
Sugar (refined)	110	120	83	55	51	263	373	307	35	120	35	69	36	345	12	4	581
Wine	90	163	94	54	8	8	52	69	36	345	12	4					
Total	2,256	2,275	2,375	2,461	2,526	2,581	2,635	2,681	2,686	2,754	2,805	2,812	2,899	2,910	3,002	3,059	3,152

Estimates by the Food Section, British Ministry of Economic Warfare.

approximated the location of the remaining countries within this pattern. In short, what is being suggested is the construction of a chart which, in appearance, would resemble the periodic chart of Mendeleeff, prepared at a time when the development of chemistry was not too unlike that of the present status of nutrition. The comments to follow suggest that there are even now a variety of clews on which to commence work. Some clews spring out of the statistical inventory of food consumption, some may be drawn from the tables of nutritional requirements, and some from the findings of family budget studies.

Clews from Statistical Inventories

The food consumption of 17 European countries (Table 1), when reduced to total calories seems to fall into three regional patterns. Location on the face of the earth, thus, may be one of the characteristics which govern the position of countries in the proposed chart of national nutrition. One pattern embraces the group of countries lying generally in the northern part of Europe where prewar food consumption totals 2,900 or more calories per day per capita. In this group are the Scandinavian countries, Finland, and Russia. The second, occupying the opposite extreme and having 2,400 or less calories, includes Italy, Greece, and Poland. The consumption of the countries of central Europe, that group of states lying between France and Rumania, occupies the middle bracket and disperses on either side of the 2,600-calorie mark.

There seems to be a tendency for the value of the total calories to increase when departing northward from the Mediterranean, and to decrease when moving eastward from the British Isles to Europe's eastern boundary. Naturally, these sweeps do not progress by even stages and it is too early to tell if the irregularities are significant. Poland, particularly, seems to be troublesome. Nonetheless the detailed ranking follows:

Less than 2,400 calories—Greece, Italy, Poland

2,400 to 2,900 calories—Rumania, Yugoslavia, Czechoslovakia, Netherlands, Bulgaria, Belgium, Hungary, Austria, France, Germany

More than 2,900 calories—Norway, Russia, Finland, Denmark

From other data at hand (Tables 2, 3, and 4), though they are not strictly comparable with the foregoing, additional countries fit into the pattern in this manner: The Near East, Egypt, China, Japan, and India seem to fall within the less than 2,400 bracket. Canada,

TABLE 2. ESTIMATED PREWAR PER CAPITA SUPPLY OF FOOD IN TERMS OF AVAILABLE CALORIES PER DAY, BY TYPES OF FOOD, IN SELECTED NEAR EASTERN COUNTRIES

Type of food	Trans-Jordan	Iraq	Palestine	Egypt	Syria and Lebanon
Grain	1,243	1,222	1,089	1,602	1,377
Potatoes		1	22	1	16
Pulses-nuts	93	64	88	209	83
Milk (liquid whole) ¹	139	157	277	71	345
Meats ²	30	31	29	26	24
Poultry	2	2	14	2	1
Eggs	12	9	34	7	9
Edible oils	22	17	88	68	90
Sugar	113	101	175	83	159
Fruits	222	380	255	66	220
Vegetables	21	18	22	12	28
Miscellaneous					
Total	1,897	2,002	2,093	2,146	2,352

¹ Includes all dairy products in terms of milk.

² Includes fat and offals.

Estimates from Foreign Agriculture Nov. 1948, Office of Foreign Agricultural Relations USDA.

TABLE 3. ESTIMATED PREWAR PER CAPITA SUPPLY OF FOOD IN TERMS OF AVAILABLE CALORIES PER DAY, BY TYPES OF FOOD, IN 3 COUNTRIES

Type of food	United States	Canada	United Kingdom
Grain products	889	938	899
Potatoes	136	172	123
Pulses-nuts	95	66	40
Fruits	134	80	63
Vegetables	58	34	25
Milk—cheese, etc. (total solids)	388	361	272
Meats	414	404	498
Fish—poultry	52	57	42
Eggs	62	53	39
Fats	498	463	510
Sugar	480	480	451
Miscellaneous	23	16	22
Total	3,228	3,124	2,984

Estimates from Food Consumption Levels in the United States, Canada, and the United Kingdom USDA War Food Administration, April, 1944.

the United States, Argentina, Australia, New Zealand, Sweden, Eire, Uruguay, come within the uppermost bracket, while Chile, Brazil, the Union of South Africa, and possibly Spain, lie in the middle group.

A national per capita food consumption which ranges from 2,000 calories per day to over 3,000 is very wide. What, specifically, does

Denmark, at 3,000 calories, consume that Greece, with 2,200 calories, does not? A look at the foods from which these calories are derived indicates that the smaller part of the range is traceable to differences in the aggregate consumption of grain, potatoes, fat, and sugar. The sum of the calories coming from these four groups amounts to 1,900 calories for Greece and 2,400 for Bulgaria, but for

TABLE 4. ESTIMATED PREWAR SUPPLIES OF CALORIES, PER CAPITA PER DAY, IN SPECIFIED COUNTRIES

Country	Total Calories
Ire	3260
Sweden	3200
Spain	2830
Turkey	2720
New Zealand	3380
Australia	3220
China	2330
Japan	2310
India	2150
Union of South Africa	2470
Argentina	3300
Uruguay	2930
Chile	2610
Brazil	2490

Preliminary Estimates by Office of Foreign Agricultural Relations, USDA.
Purves, C. M.

the larger number of these European countries the sum falls between 2,100 and 2,400. The remaining foods listed in the tables are dairy products, meats, fish, poultry, and eggs. Accordingly, the larger part of the difference in the total calories of the several countries appears to be accounted for by the varying quantities of dairy products and meats that are consumed. The countries grouped according to the number of calories from meat and dairy products arrange themselves like this:

- 100-400 calories—Italy, Greece, Rumania, Bulgaria, Yugoslavia, Hungary, Poland, Russia
- 400-700 calories—France, Germany, Austria, Czechoslovakia
- 700-900 calories—Denmark, Norway, Finland, United Kingdom, Canada, United States

In this relationship appears to reside some part of the explanation of the regional gradients that were noted earlier. It likewise

provides some indication of the expected global arrangement of the national total calorie pattern. Those countries which the present data suggest have high total calories are the ones situated in the parts of the earth which are relatively cool and moist, and it so happens that these are the locations, but the only ones at present, where grass grows well and maintains its succulence and nutritive properties for a relatively long period.

Clews from Nutritional Standards

It is known that the caloric requirements of an individual vary according to his size, age, etc. It is known, too, that the make-up of the population of the various countries of the world is not identical. Here are additional clews that may be helpful in assigning nations to their proper place on our chart.

One parenthetical comment may be needed at this point. Because nutrition is a new science and much still remains to be learned, these nutritional standards for individuals are much more in the nature of recommended allowances than they are fixed requirements. Moreover, they are not entirely objective, for they visualize a certain type of person as their end product in much the same sense that the kind of an animal a husbandman aims to secure dictates the kind of ration and the quantity he will feed. But there is this difference. The pig is quite willing to cooperate with the feeder and to the best of its ability become eventually a 400-pound hog, but the kind of creature that the human subject wants to feed himself out to in the end may not be the same as that the professional nutritionist has visualized in setting the values of a table of this kind. For one thing, the human insists that there are other purposes served by eating than providing nutrition, as witness the high consumption of sugar which nutritionists are inclined to view with alarm. This lack of objectivity in the standard may be of little concern when applied to a people after whose kind it was patterned, but it can be wholly misleading if applied to communities where persons assume quite different physical and psychological characteristics. Before following out the clews contained in these standards, it may be well to consider what modifications are desirable in the policy that has been written into them.

One standard applicable to an individual that has been widely publicized was released not so long ago by the National Research Council of the United States. It is reproduced in Table 5. In this

standard there are several factors which may account for differences in food consumption between nations. They furnish additional clews to the place of each nation in our proposed chart.

Work is the first of these factors, for muscular activity more than anything else increases calorie requirements. A man doing heavy muscular work, such as a miner, may require as many as 5,000 calories per day, and this is double those needed by the same

TABLE 5. RECOMMENDED DAILY ALLOWANCES
Food and Nutrition Board, National Research Council

	Calories
Man (70 Kg.)	
Moderately active	3000
Very active	4500
Sedentary	2500
Woman (56 Kg.)	
Moderately active	2500
Very active	3000
Sedentary	2100
Pregnancy (latter half)	2500
Lactation	3000
Children up to 12 years:	
Under 1 year	100/Kg.
1-3 years	1200
4-6 years	1600
7-9 years	2000
10-12 years	2500
Children over 12 years:	
Girls, 13-15 years	2800
16-20 years	2400
Boys, 13-15 years	3200
16-20 years	3800

National Research Council. Reprint and Circular Series No. 115, January 1943, Washington, D. C.

man if he were engaged in sedentary activity, as a clerk. Accordingly, it follows that a country having a high proportion of its people doing active work will have a correspondingly high per capita food requirement. It is our impression that on the average less work is done in a Far Eastern than in a Western country; in warm countries than in temperate areas.

Varying body weight is another factor that could account for differences in national food consumption. The average size of indi-

viduals for the various countries of the world is not the same. The average weight of a man about 30 years in north Europe has been estimated at 70 kilograms. The National Research Council's standard is computed for a man of this weight and for a 56-kilogram woman. In southern Europe the average body weight of the adult male is said to be about 64 kilograms and in South China, Japan, Burma, and Java to between 50 and 55 kilograms. It is known that energy requirements vary approximately with body weight. From these observations some illustrative calculations can be made. If the calorie requirement of a man weighing 70 kilograms is 3,000, for a 60-kilogram man it would be 2,600 calories and for a 50-kilogram man about 2,100 calories. Women weigh less than men—perhaps 15 to 20 percent less—although the differences between sexes are thought to be less for small races than for large. Hence, if it is assumed that one population is composed wholly of equal numbers of men and women and the men weigh 70 kilograms, the average calorie requirement for that population would be 2,750. For another population where the men weigh 60 kilograms, the intake requirement would be reduced to 2,360 and where men weigh but 50 kilograms it would average no more than 1,940 calories.

As standards assign fewer calories to most children than to adults, the national food consumption becomes smaller as the proportion of children in the population increases. In a country like Sweden children make up about a fourth of the total, whereas in Yugoslavia or Rumania the ratio is close to a half. Thus, other things equal, Sweden will have the higher intake requirement. To the difference in the age of the population might be traced as much as 10 percent in the difference between calorie requirements of a country.

The calorie requirements of females are less by approximately 5 percent than those of males even at the same weight and doing the same amount of work. An analysis of the population of the world may not reveal a sex ratio falling much outside of the range of 45 to 55 percent male. Thus, as compared with the influence of work, body weight, and age, the influences of sex upon the resulting national average will not be large. At the most it might account for from 2 or 3 percent of the difference in total calories between countries.

There is an impression, even though there is no satisfactory evidence on the matter, that the rate of energy expenditure varies with the climate: that people in cold northern regions need much

more to eat than those residing close to the equator. As a large part of the world's population lives in warm countries, whereas most of the work that has been done on nutrition has been conducted in the temperate zone, it is important that the influence of climate upon food requirements be removed from the field of conjecture.

In the foregoing the influence of work, body weight, age, and sex, upon the national average nutritive requirement has been set out in terms of the part each factor plays when working by itself. Were all of them working together in the same direction in one country and in the opposite direction in another, a range in the calorie values of the national averages of the two might be as much as 40 percent. Thus, if 2,500 calories represents about the middle of the possible world-wide range between countries (for the United Kingdom, Canada, and the United States it is about this figure), a national average requirement of 2,000 calories and of 3,000 calories per day per capita would mark the approximate position of the end points. Thus, too, a nation of small people living in a hot climate with a high proportion of children to adults might be expected to have a national average requirement approaching 2,000 calories, whereas a nation of large people having few children and living in a cold climate might have its requirements approach the 3,000 calorie-level. All of this points rather definitely to the conclusion that our chart of national nutrition will be made up of many compartments. It also indicates that a low national consumption figure in terms of calories does not necessarily mean a shortage of food for the people of that nation.

Clews from Family Budget Studies

Finally, family budget studies disclose a number of forces at work affecting the division of a nation's food supply among its people. This evidence may have a bearing at this time, for the national food consumption figure is simply the sum of the consumption of all individuals within its borders. Some nations will have a larger part of their population influenced by the situations to be mentioned in a moment, others less, and the national food consumption of each would be expected to differ accordingly.

The first of these forces is the difference in the ability of people to produce the food they eat. Many farm families have more to eat than city families of equal income. Their poultry, garden, and

livestock are there for their own use, sometimes for their exclusive use, and on occasion wild fruits, vegetables, fish, and game may be available for taking. In contrast the city family must buy.

At once arises the thought that predominantly rural nations consume more food than those made up mostly of city dwellers. Yet at the same time, the rural family depending most upon home-grown food must eat whatever grows in the neighborhood and to a considerable degree it may be found that nations do likewise. Some rural families live in areas where grass for livestock does not grow well, where gardens are difficult to bring to harvest, and game long since has disappeared. But a limited variety of foods in the diet does not necessarily mean inadequate food. There are parts of the world, however, where farms are so small and the economic pressure so great that the farm produce must be sold, even at the expense of the farmer's own table.

Next is that segment of the population—the dwellers in small villages—which seems to have difficulty in securing its pro rata share of some parts of the nation's food supply. These people are neither city dwellers nor farmers and therein seems to lie the difficulty. Were they dwellers in cities they would have the produce of wide areas from which to select, if they had the money to buy. These villagers may be well provided with the staples but the perishables coming from abroad either stop in transit before they reach the village or those produced locally for sale frequently are destined for the cities. Withal, the resulting diet promises to be deficient in a number of foods that are available to other people.

In this case the trouble seems to arise because the commercial trade in more perishable foods is not organized to provide regularly for the small, isolated village. This in turn suggests that those countries where the food trade is not organized to handle a wide variety of foods may be the ones to secure a smaller quantity of food than others more favorably situated in this respect.

In addition, seasonal food production is a cause of unequal distribution of a nation's food supply among its people. Eggs and milk reach maximum production in the spring; crops come to a harvest, each in its respective season, and the winter produces the lean months. Without storage, the cycle is one of feast and do without. With simple facilities the staples will store relatively well, yet the perishables undergo increasing losses as time wears on. But there are areas where the weather, insects, and vermin take a heavy toll,

even from the staples. Between areas, both within a country and for the world at large, there is a vast difference in the provision for food storage.

Highly organized trading centers, whether cities or nations, cope best with the problem. There the seasons are bridged over to the greatest degree. There consumption may proceed year long. But this trade in out-of-season foods is costly and the consumer must pay the bill or go without. Some consumers decide one way, some the other, and as they decide so is the nation's food divided.

Finally, there are differences in food consumption due to income. Obviously this is a factor of more importance in cities where families buy what they eat than for rural families producing much of their own food. Increased diversification in food consumption takes place as income becomes larger. Families with small income consume a larger portion of their calorie intake in the form of cereals, potatoes, sugar, and fats. As incomes rise, the emphasis is shifted to other foods—to meats, fish, milk, fruits, and vegetables. It may follow that nations standing high on the income scale follow the pattern thus marked out by the observations that have been drawn from a few family budget studies.

Budget studies, however, have been made only in a few countries and it is not known what results would be shown if more widespread materials were available. However, if forces of the kind that appear to play upon the share that families get of the national food supply do likewise bend a little the course of the division of the world food going to each nation, then they, too, offer some clews helpful in assigning each nation to its tentative place on our chart of food consumption at the national level.

These are some of the factors which it now appears may influence food consumption at the national level and thus may prescribe the tentative location of each nation on our chart. But how these individual factors, and others like them, fit together to give the answer for any given country is not known. To find out rather quickly is the task ahead. Either it will turn out that there is some orderliness about food consumption at the national level or there is not. If there is not, then attention must be transferred promptly from the national level to those particular groups within a nation that tangible, first-hand evidence indicates are without adequate food.

A FRAMEWORK FOR THE STUDY OF PERIPHERAL ECONOMIC AREAS

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The Natural Economic Community

WHEN C. J. Galpin published, in 1915, *The Social Anatomy of the Agricultural Community*,¹ he had discovered the "natural" community, a "unit of social observation and study." The center of Galpin's community was the trading village or town. The area of the community was that in which the persons located therein traded regularly in the village. The method used in ascertaining the limits of the village trade area was to find out from each of the principal stores, the bank, the local dairy, etc. who were those people living in the surrounding area that patronized regularly these respective economic institutions. The residences of these people were then located on a map. A line was drawn connecting locations of those regular village traders who lived the farthest removed from the village center. This line then marked the extremities of the trade area of the village. The determining consideration of outermost farmers in the trade area as to whether they will trade with one village center or with some other is the alternative cost of transportation of their goods to the one or to the other market center. These we may term the *marginal farms*.

Galpin's studies showed that the village trade area was not only the locale of common economic interests and associations but was also the basic area of social relationships. Robert E. Park says that "two facts were brought out as a result of this investigation which have general and methodological significance:

"1. The actual community, as determined by social intercourse, communication, and common interest, does not conform and frequently quite transcends, the limits of the official and administrative community, the county, for example, and the township.

"2. The web of personal relations in which customs and institutions grow up does, on the whole, tend to conform to the area of trade relations and of common interest. Trade comes first, but political and social institutions follow."²

¹ C. J. Galpin, *The Social Anatomy of the Agricultural Community*, Wisconsin Agricultural Extension Station Bulletin, No. 34, 1915.

² Robert E. Park, "Urbanization as Measured by Newspaper Circulation," *Am. Journal of Sociology*, Vol. XXXV, July, 1929, No. 1, pp. 61-79.

This then is the natural community. The basic element in its structure is economic, that is, communication as carried out through trade relations. This is the ecological phase of what N.S.B. Gras has termed *town economy*: "an organization of consumers and producers who work out their dependence on one another and the outside world through the agency of a town."³ Gras's emphasis is on the organizational function while Galpin places this within a definite geographical area. Although the natural community has broader social and cultural implications, as Park points out, it is the economic community which has the interest of this paper.

The "natural community" concept and the essential methodology used by Galpin has been applied by Park, McKenzie, and other sociologists to the study of the metropolitan community: the city and its suburbs and the whole region dominated by the city. Again we turn to Park for the application: "In this larger region, as in the smaller one of Galpin's study, the trade area—or rather trade areas, for there are several—coincides with the cultural. People go to the city, as the farmer goes to town, not merely to market their products or their talents, as the case may be, but to meet people and to get the news."⁴

Here again trade relations become the avenues of communication, the basic structure of the natural community. Following Gras, also, *metropolitan economy* is the organization of people having a large city as the nucleus: ". . . metropolitan economy is the organization of producers and consumers mutually dependent for goods and services, wherein their wants are supplied by a system of exchange concentrated in a large city which is the focus of local trade and the center through which normal economic relations with the outside are established and maintained."⁵

Since the catalytic agent of the community is communication and since the metropolitan newspaper is a major common means of communication, Park found that the area dominated by the metropolis may be defined by the area of circulation of the more important metropolitan newspapers. But, as he points out, ". . . it (the newspaper) has not wholly supplanted the market place as a news center. News make prices as well as credit, and the financial center is always in the closest proximity to the news ticker."⁶

³ N. S. B. Gras, *Introduction to Economic History*, N. Y., 1922, p. 109.

⁴ Park, *op. cit.*

⁵ Gras, *op. cit.*, p. 186.

⁶ Park, *op. cit.*

The hinterland of the large metropolis may, and usually does, include many other cities and towns. But these cities and towns are subsidiary centers which facilitate the functioning of the community as a whole and are under the financial and commercial dominance of the metropolis. Some of these are of a specialized nature—industrial centers, political capitals, etc. But the major commercial and industrial concerns in the subsidiary cities are controlled by the financial interests of the metropolis. The securities of the local corporations, for instance, are bought and sold on the metropolitan securities market. The larger the metropolitan center is and the more important its economic institutions are, the larger is the hinterland over which it has dominance. Here also alternative costs of transportation determine the orientation of the points farthest removed in the trade area to one or the other metropolitan centers. The situation of these points would be marginal in the same sense as we have already employed the term.

The ecological structure of the agricultural hinterland of the metropolitan center or big city has been described by the German economist, Von Thunen in his *The Isolated State*.⁷ Von Thunen envisioned a large city located on a fertile plain of equally distributed fertility. His plain was isolated so that it was not affected by the overlapping hinterlands of other cities. In such a situation, the distribution of types of agricultural production in the metropolitan hinterland could be represented by a series of concentric circles or zones radiating out from the city. The determining factor in fixing these zones of agricultural production is the cost of transportation from zone to market.

In the first zone, closest to the city, are produced products which are bulky and highly perishable such as truck products or whole milk. In the second zone milk is made into butter, cheese and other milk products which are less bulky and have a higher specific value (value per unit of weight). Farther out grain is fed to hogs and beef cattle which have a higher specific value than the grain itself. The next zone still farther out would produce grain to be sold on the markets. Finally comes the open range or grazing lands. The presence or development of transportation routes such as a navigable river or a railroad would cause an elongation of the respective zones out along these lines of transportation. This is certain because it is

⁷ J. H. von Thunen, *Der Isolierte Staat*, Part I, pp. 390-391. See also N. S. B. Gras, *A History of Agriculture*, pp. 145-148.

the cost of transportation and not mere physical distance which is the determining factor in the location of the different types of production.

The element of time enters, in an important manner, in the case of the more perishable products such as truck and milk. Rapid transport enables the distance from the city where such products can be produced to be greatly extended. This is particularly true when the line of transportation extends from north to south, or vice versa, bringing in areas which have different seasons of production for climatic reasons or where the products marketed can only be produced in different climatic zones.

Under actual conditions differences in soil character and in topography enter to upset the regular or ideal pattern presented by Von Thunen. Also the location of other competing metropolitan centers and the presence of smaller cities and towns with their respective hinterlands serve to complicate the picture. But these are distortions and complexities which do not alter the fundamental force of transportation cost in agricultural orientation in the metropolitan hinterland. Trade relations remain the principal avenue of communication which ties the community together. Von Thunen's hinterland is simply one phase of the natural economic community. Its limits would be the composite trade area of the metropolis.

The Super-Metropolitan "Orbit"

At several locations in the world there have developed large urban commercial and industrial agglomerations. The three largest of these are (1) that which has grown up around the North Sea in Western Europe, (2) that which has developed in the Laurentic basin (New York to Chicago) in North America and (3) that which has grown around the Japan and China Seas in Eastern Asia. For the purposes of this paper this type of urban agglomeration might be termed a *super-metropolitan agglomerate* or simply *the agglomerate*.

By far the major portion of the world's industrial capital is concentrated in these three super-metropolitan agglomerates. They contain the major portion of the world's largest cities and of the world's industrial population. Each one of them is dominated by one or a few large super-metropolitan centers. In North America it is New York City. In Asia it is Tokyo and Shanghai. Political circumstances divided the European agglomerate between London, Berlin and Paris. These cities contain the great capital markets

where the shares of ownership and financial control of corporations, cartels and trusts which operate and have locations throughout a wide area are bought and sold. All other capital markets within the super-metropolitan agglomerate are subsidiary to these and are directly and immediately affected by the supply and demand conditions in the exchanges of these super-metropolitan centers.

The super-metropolitan agglomerate can be considered much in the same way as we have Galpin's village or the metropolis. It also has a hinterland, a composite trade area. We shall call this the *super-metropolitan orbit* or the *orbit*. Within this orbit will be found subsidiary metropolitan centers with their individual hinterlands. But the major trade orientation of these subsidiary metropolitan centers is with the super-metropolitan agglomerate. The factor of transportation costs would cause the ecological pattern of agricultural production within the super-metropolitan orbit to be roughly similar to that described in connection with the metropolitan hinterland. Likewise this general pattern would be considerably complicated by the existence of individual metropolitan centers within the orbit, with their own respective hinterlands, and by geographic distortions.

The task of defining the limits of a particular orbit is made difficult by the very complexity of its organization and by the fact that it may and usually does include all or parts of entire nations with different political organizations and policies and with boundaries which are much more meaningful as a complication than those of mere states or counties within a single nation. But it is the basic assumption of this paper that these super-metropolitan agglomerates are the centers of economic activity, commercial and industrial, which have wide and at least theoretically definable trade areas; that these with their orbits are natural economic communities. To paraphrase N. S. B. Gras, the *orbit* would be an area in which a *super-metropolitan economy* would find its locale. In it would be found the organization of producers and consumers mutually dependent for goods and services, wherein their wants are supplied by a system of exchange concentrated in a *super-metropolitan agglomerate* which is the focus of *orbital trade* and the central organization through which normal economic relations with the outside are established and maintained.

Here again, the centers and areas farthest removed from the agglomerate, that is, on the periphery of the orbit, would be *marginal*.

They would have the alternative of trading with one or the other super-metropolitan agglomerates. The major factor in the determination would be the difference in transportation costs.

Three major super-metropolitan agglomerates have been mentioned, namely: (1) The New York or Laurentic, (2) The Western European and (3) The East Asiatic. All of the populated parts of the earth's surface do not fall within the orbits of these three major agglomerates. First, there are several smaller and incipient urban-industrial agglomerates which have not reached the scope and maturity of the major agglomerates, but which have smaller and somewhat less well organized orbits and which could be studied in the same manner. Likewise there are independent countries of limited economic importance which lie outside and unattached to any single orbit and possibly trading with several.

Secondly, there are areas which may be political possessions or mandates of orbital nations or areas which lie within independent states but which are precapitalistic in nature. These areas have not been fully invaded by the spread of capitalism. They remain essentially communal (*Gemeinschaft*) in character. The interiors of many not yet fully developed capitalistic countries contain such areas—the interior of Brazil for example. The same would be true of the less developed islands of the East Indies and of much of oriental civilization.⁸

The third group of areas lying outside the major orbits are the economic colonies. It is wished here to specify economic colonies. Many areas are politically designated as colonies which either have no particular economic significance to the possessor nation, or they lie clearly within the orbit of another agglomerate and are economically a part of it in spite of political affiliation. A possession may, for instance, have only military strategic value to the possessor. On the other hand, the Bahama Islands are politically a colony of the United Kingdom but the major portion of their trade is with the United States and Canada, that is with the New York orbit.

Ethel Dietrich has defined a colony, from the economic point of view, as ". . . a territory outside the boundaries of a mother country over which the latter has the right to make the ultimate decisions on commercial policy."⁹ For our purposes this definition must be expanded to include: and wherein the mother country so

⁸ J. H. Boecke, *The Structure of Netherlands Indian Economy*, N. Y., 1942, p. 4.

⁹ Ethel B. Dietrich, *World Trade*, N. Y., 1939, p. 307.

exercises this right as to dominate the commercial policy of the territory to the advantage of the mother country and to the total or partial exclusion of trade with other areas.

The economy of the colony is constructed around an artificial arrangement whereby foreign capital enters to exploit natural resources for the advantage of a mother area rather than to develop a well-rounded economy. Colonies consistently export more of their products than do other areas. They are exporters of raw materials and, since most of them are situated in the tropics, tropical products including tropical foodstuffs. Dietrich has listed the chief colonial imports as: coarse textiles, kerosene, prepared and preserved foodstuff, liquor, tobacco, salt, matches, soap, glassware and tools and machinery for primary industries. "The chief variations are due to the proportion of Europeans or Americans to the local population and to the stage of culture of the natives."¹⁰

Many nations or areas which were formerly colonies, maintain the colonial nature of their country long after they have attained their political independence. They remain economic colonies, so to speak, perhaps not of a particular mother country but surely to an agglomerate of which they are not a part. The South, for instance, maintained the essential pattern of its colonial economy long after becoming politically a part of the United States. The economic ties to the European agglomerate were so strong as to become an important factor in the move for secession.

The expanding orbit of a relatively new super-metropolitan agglomerate, which is growing, may encompass areas which are currently colonies or have formerly been colonies of another agglomerate. Their entry into the new orbit presents problems of reorientation and often reorganization. Here again the concept of *marginality* is useful. Political ties with the outside or institutional hangovers from a colonial regime often make difficult the proper productive, consumptive and commercial functioning of the area within the new orbit. Such areas also are marginal.

Agricultural and Industrial Orientation Within the New York Orbit

The attempt will not be made here empirically to define the outer limits of the orbit of the New York super-metropolitan agglomerate. Some notion of its extent, however, and of the areas which are near

¹⁰ *Ibid.*, p. 313.

its periphery can be ascertained by studying the trade orientation of outlying and neighboring countries. The accompanying table does this for the countries to the south of the United States. It gives the percent of total foreign trade of each country that was with the United States and Canada, as over against the percent that was with Western Europe—the nearest competing super-metropolitan agglomerate—for the three year period 1937, 1938

TRADE ORIENTATION OF SEVENTEEN LATIN
AMERICAN COUNTRIES
(Total Foreign Trade, 1937-39)*

Country	Total foreign trade (percent)	Trade with U.S. and Canada (percent)	Trade with Western Europe (percent)	Trade with all other countries (percent)
Cuba	100.0	74.9	17.9	7.2
Honduras	100.0	74.6	9.9	15.5
Nicaragua	100.0	64.5	23.4	12.1
Mexico	100.0	64.2	23.5	12.3
Panama	100.0	61.4	15.4	23.2
Guatemala	100.0	58.8	35.9	5.3
El Salvador	100.0	58.7	33.9	7.4
Colombia	100.0	56.7	31.1	12.2
Costa Rica	100.0	49.3	38.4	12.3
Haiti	100.0	46.7	45.9	7.4
Dominican Republic	100.0	42.7	45.8	11.5
Ecuador	100.0	39.9	37.8	22.3
Brazil	100.0	37.6	46.8	15.6
Peru	100.0	34.1	42.9	23.0
Chile	100.0	29.7	54.7	15.6
Argentina	100.0	14.4	63.3	22.3
Uruguay	100.0	10.8	58.1	31.1

* Source: Bureau of Foreign and Domestic Commerce, *Foreign Commerce Yearbook*, 1938, 1939 (An adaptation).

and 1939. The fact that these two agglomerates are separated only by water, with the cheapness of water transportation, actually brings them more in competition with each other than geographical distance would indicate.

Cuba, Mexico, and the Central American states would fall clearly within the New York orbit, for the major percentage of their trade, in most cases, is with the United States and Canada (principally the United States). On the other hand the countries of lower South America have only a relatively minor percentage of trade with the United States and Canada, the major portion of their trade going to Western Europe, as is the case of Argentina and Chile, or where

it is divided among Europe, neighboring countries, and the rest of the world. Guatemala, El Salvador, Costa Rica and Colombia, although they have the major portion of their trade with the United States (more than 50%), also trade very heavily with Western Europe. Haiti, the Dominican Republic, and Peru traded just about as much with Western Europe as they did with the United States, Peru even a bit more.¹¹

The Central Americas, the West Indies, and Colombia, according to this measure, would roughly mark the periphery of the New York orbit. These are the areas of marginality, where political consideration or temporary advantage may cause major shifts in trade from one orbit to the other. Haiti, for instance, has for a long time had relationship with France wherein it has had to ship coffee to that country in order to service a heavy debt growing out of its emancipation from French control. The recent trend (1936 onward) in Haiti, however, has been for increasing trade orientation with the United States.¹²

Jamaica, Trinidad and the British West Indies are, for the most part, also marginal. Jamaica, in 1939 for instance, had 42 percent of her trade in the United Kingdom but also had 35 percent with the United States and Canada. The Bahama Islands, on the other hand and in spite of colonial ties, have a major trade orientation with the United States.¹³ Puerto Rico, a U. S. possession, on the other hand, has 96 percent of her trade with the U. S.

We may conclude, thus, that the New York orbit extends to the Caribbean, that the West Indies lie within or on the periphery of the orbit and that many of them are marginal in that they may trade heavily with the New York or European agglomerates depending upon circumstances.

Within this orbit, if our fundamental assumption is correct, we should be able to ascertain the general agricultural orientation along the lines of Von Thunen's thesis as outlined in connection with the metropolitan hinterland. A map published in the Philip's Comparative Atlas Series¹⁴ shows, in a broad and general manner

¹¹ Venezuela is left out of account because of the peculiarity of its oil exports to the Dutch West Indies to be refined or re-shipped.

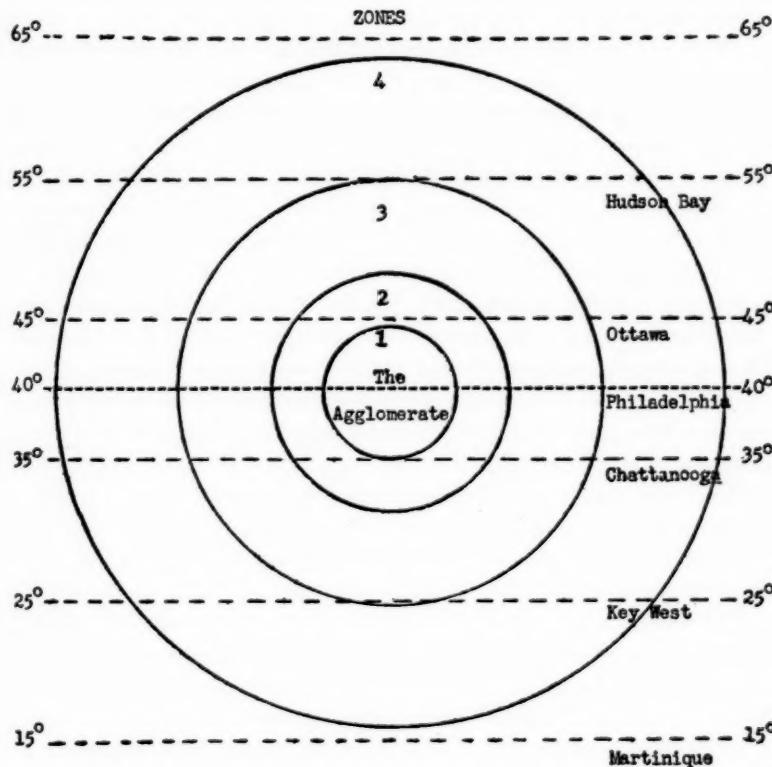
¹² U. S. Tariff Commission, *Foreign Trade of the United States*, Part 2, Section 20, p. 22.

¹³ *West Indies Yearbook*, 1940-43 (Published in Montreal and New York by Thomas Skinner of Canada, Limited).

¹⁴ George Philip (Ed.), *Philip's Series of Comparative Wall Atlases*, London.

the locational relationship of agricultural production areas to the area of industrial concentration in North America. Within and close to the agglomerate, agriculture stresses general farming and stock

AGRICULTURAL ZONES ABOUT THE NEW YORK
SUPER-METROPOLITAN AGGLOMERATE



West

- Zone 1. Bulky and highly perishable products, e.g. truck, vegetables, potatoes and whole milk.
- Zone 2. Grain and fodder fed to livestock producing butter, cheese, pork, beef, etc.
- Zone 3. Extensive grain production for market, livestock pastures.
- Zone 4. Open range lands.

South

- Same
- Corn and winter wheat fed to livestock; general farming. Subsistence farming in rugged areas.
- Southern plantation: Cotton, tobacco, cane. Also subsistence farming in poor and rugged areas.
- Sugar latifundia; coffee, tobacco, sisal and other tropical products; open range and pastures where available.

raising. Farther removed and toward the West, that is, within the same climatic zone, are located the pastoral and cattle producing areas. Still farther west are the open range and grazing lands. Agriculture becomes less intensive as the location is farther and farther removed from the agglomerate. A closer analysis would break these areas up into more specific classifications, but the same tendencies would prevail.

On the other hand, as one goes southward into different climatic zones, the distribution of areas is modified by the production of agricultural products which cannot be effectively produced in the climatic zone in which the agglomerate is located. Certain other products are produced at different seasons than the same in the more northern zones and reach the market at different seasons. Such crops as cotton, certain types of tobacco, sugar and coffee enter the picture. These are crops which have a high demand in world markets but which can be produced only under certain types of soil and climatic conditions. In areas meeting such conditions, these products will be produced to the exclusion of all others, except in such locations as near a large city or because of some other condition where there is an over-coming demand for some other product.¹⁵

With the exception of these special high demand crops whose areas are determined by geographic factors, the tendency exists for agriculture to become less intensive with range lands in the areas farthest removed.

The West Indies clearly lie in this area farthest removed within the orbit. If the area had the same juxtaposition in the climatic zone of the agglomerate, it would be devoted to open cattle ranges. But "absolute advantage" gained through sub-tropical location determines the devotion of this area to sugar, coffee, tobacco, bananas henequen, sisal, rubber and such tropical products. The factor of cost of transportation further limits marketable products of the area to these products. All of them mentioned have high shipability and they have high specific value (value per unit of weight). Other tropical fruits, for instance, such as papaya and mangos, are too perishable to reach the market in good condition under means of cheap transportation (shipping). Still others, the citrus fruits, cannot compete with Florida and California, which have the facilities

¹⁵ This is the principle of "first choice." See J. D. Black, *Production Economics*, p. 147.

of rapid transportation, as long as these areas are able to supply the market of the agglomerate. This same is true, of course, with vegetables. Lands available for pasture and range can and are used for grazing livestock to produce meat for local consumption and hides for the metropolitan markets. Such products as milk and milk products, vegetables and perishable fruits are limited in their market to local on-the-spot consumption and such non-farming and urban population as exists.

Industrial orientation within the orbit is also a function principally of transportation costs. The presence, in not too distant areas, of iron and coal have been a necessary requirement for the development of large industrial concentrations. Once established, however, they make possible large urban populations both at the centers of industry and in the metropolitan centers which assemble, distribute, and finance industrial products. This population is highly specialized as to various occupations, each person performing a single function and depending upon the general production and distribution organization to provide him with his wants. This creates a large concentrated market for the industrial and agricultural products of the entire area. The position of the basic raw materials, coal and iron (and particularly coal), in relation to the metropolitan market centers determines the location of the principal industrial concentration. Factors of efficiency in the proximity of subsidiary and complementary industries, proximity to the capital market, the presence of a large heterogeneously skilled labor supply are additional forces which tend toward the agglomeration of industry.¹⁶ We are not concerned here, however, with the various locations of industry within what we have termed the agglomerate.

But all industry within the orbit is not so located. A study of an economic map of the United States will show other smaller industrial agglomerations. Certain types of industries are scattered throughout the countryside. Every commercial city and town has some industry. Some of this dispersion results from the high rental cost of locations in the larger agglomerations. Smaller factories, in which location near supply of raw materials and cheap power is not important, seek out the demand in the smaller markets.¹⁷ The pres-

¹⁶ For discussion of the factors tending to industrial agglomeration see C. J. Friedrich (Ed.), *Alfred Weber's Theory of the Location of Industries*. University of Chicago Press, Chicago, 1929, pp. 127 ff.

¹⁷ *Ibid.*, p. 61, Weber concludes that industries with low *raw material indexes* will move toward places of consumption. Those requiring weight losing materials,

ence of electricity and oil as sources of power promotes further decentralization. In certain industries the proximity to certain requisite raw materials is so important as to force their location at or near their sources. In others, the presence of a large labor supply suitable to the needs of the industry is a determining factor.

Ethel Dietrich points out that industrial growth in a new area follows a set pattern. "Those industries are first established which serve common needs, such as textiles, shoes, and certain foods. As industrial evolution continues, more varieties are added and goods of higher grade are fabricated. The capital goods industry to make machines comes last, dependent as it is on scientific skill and elaborate technology." Subsidiary and branch plants are another means of industrial decentralization. Such movement involves migration of capital goods and managerial ability in place of shipping of finished products.

Whether or not an outlying area can participate in such industrial decentralization and the extent of its participation depends largely upon the development of local purchasing power on the one hand and/or the existence of power resources on the other.

The West Indies exhibit a severe absence of the basic resources for industrial development. There is neither iron nor coal. Most of the areas have no oil resources. Water power resources may be developed in certain areas, but even these possibilities are limited by the lack of year around flowing water courses and by long annual dry seasons. A limited number of primary industries are developing such as textiles, food processing plants, cement and brick factories to supply a local demand. Plants which provide the first processing of food and industrial raw materials for the central markets, such as the sugar centrals and sisal shreading plants have developed and there may be more of this.

But located near the periphery of the orbit and lacking the basic requirements for heavy industry it appears that there can be little industrial development in the West Indies beyond these primary and local demand based industries. For other industries the cost of transportation of necessary raw materials to the area and of finished products to the central markets is too great. These primary industries, however, may continue to develop to a limited degree. The existence of a plentiful cheap labor supply is an advantage only to and having a high *material index*, will be drawn toward the sources of the required materials.

those industries employing non-skilled, non-industry-wise labor until necessary skills can be developed. There is some limited development of handicraft industries using tropical materials and producing for the super-metropolitan luxury market. The expansion of these depends upon demand creation in the agglomerate and the spreading of the necessary handicraft skills.

Population Orientation within the Orbit

The major character of population orientation within the orbit is that the density of population declines from the agglomerate outward toward the periphery. It is common knowledge among social scientists that the natural rate of population growth in rural areas tends to exceed that of urban areas. Sorokin and Zimmerman have pointed out that for a considerable historical period there has been a net migration of population from rural districts to urban areas.¹⁸ Considering the rural-urban differential in natural population growth, it becomes evident that without a continuous draining of rural population into urban occupations, pressure of population on agricultural resources would be increased.

Dorreen Warriner in his study of the economic situation of the peasantry in Eastern and Western Europe sets forth the following general proposition: ". . . the movement out of agriculture should be regarded as a normal long period development in any progressive society, simply because food consumption does not expand in the same proportion as incomes per head rise. Movement away from the land is a natural adjustment to a *relatively* lower level of return, even if the real income of the farmer is rising."¹⁹ The alternative is rural poverty, high farm density and an excessive splitting up of holdings.

It is only when agriculture is carried out in connection with an expanding industrial economy that farmers have the advantage of an urban market, cheap credit as result of capital accumulation, and the tools produced by industries which increase agricultural productivity. As Warriner concludes, "It is precisely when the peasant farmers are *not* self-sufficient—when they exist in an industrial state—that they develop the socially valuable special qual-

¹⁸ Sorokin and Zimmerman, *Principles of Rural Urban Sociology*, New York, pp. 526-533.

¹⁹ Dorreen Warriner, *The Economics of Peasant Farming*, London, 1939, pp. 28-29. (Italics are the author's.)

ties, the independence and responsibility, the mental equilibrium due to knowledge of the land."²⁰ It is impossible to maintain an even distribution of living standards or of purchasing power without rural-urban migration and migration, consequently, from the periphery of the orbit toward its center, the agglomerate.

A glance at the pattern of population density in the eastern part of the United States shows how population density declines from

DENSITY OF POPULATION TOTAL AND RURAL, IN THE EASTERN UNITED STATES AND IN MAJOR WEST INDIAN COUNTRIES

State or country	Total popu- lation den- sity*	Rural popu- lation den- sity**	State or country	Total popu- lation den- sity*	Rural popu- lation den- sity**
New England					
Maine	27	93	Delaware	135	115
New Hampshire	54	90	Maryland	184	137
Vermont	39	50	Virginia	67	82
Massachusetts	546	183	West Virginia	79	120
Rhode Island	674	200	North Carolina	73	108
Connecticut	349	290	South Carolina	62	100
Middle Atlantic					
New York	281	106	Georgia	53	68
New Jersey	553	319	Florida	35	80
Pennsylvania	220	178	East South Central		
East North Central			Kentucky	71	77
Ohio	168	82	Tennessee	69	80
Indiana	95	61	Alabama	55	81
Illinois	141	53	Mississippi	46	72
Michigan	92	78	West Indies***		
Wisconsin	57	50	Cuba	95	110
			Haiti	265	836
			Dominican Republic	82	403
			Puerto Rico	544	521
			Jamaica	275	419

* Persons per square mile.

** Rural population per square mile of agricultural land.

*** Sources: *Agricultural Production and Trade by Countries*, U.S.D.A., Office of Foreign Agricultural Relations, *West Indies Yearbook*, 1944, op. cit.

the agglomerate outward to the periphery. Rhode Island and New Jersey have a population density of 675 and 553 persons per square mile, respectively. Mississippi and Florida, on the other hand, have densities of only 46 and 53 respectively.

If we take a measure of non-urban population density, e.g. rural population per square mile of agricultural land, the same pattern

²⁰ *Ibid.*, p. 25.

is exhibited. The highest density is in the agglomerate area of highly intensive agriculture and density declines outward from this area. Even in the plantation states, where density is relatively high for areas that distance from the center, the non-urban population density seldom exceeds 100.

The West Indies, as we have seen, are principally an agricultural region. The outlook for important industrial development is anything but hopeful. We have also noted that the region lies in the portion of the orbit farthest removed from the center. Yet Puerto Rico and Haiti have non-urban population densities of 521 and 836 respectively. In fact Cuba is the only one of the greater Antilles which has a non-urban population density of less than 400 per square mile. This is partly a reflection of the colonial background where a premium was placed on a plentiful supply of cheap labor to be exploited. But it also reflects what happens in an agricultural community when there is no outlet for rural-urban migration. With proper population orientation, population would have flowed from the West Indies in toward the urban concentrations as part of the labor force just the same as it has flowed inward from Alabama, Mississippi or Georgia. The Haitian population, for instance, has increased from 536,000 at the time of independence to the present size of 2,700,000 persons. Without local industrial development and with natural, political and cultural barriers to migration, the result has been a heavy pressure of population on resources, an excessive parcelation of the land into tiny little farms (3 to 5 acres) and great rural poverty.

This is another evidence of *marginality*, of being partially orientated within the orbit and yet partially without. This will remain a severe problem until proper orientation occurs.

Summary and Conclusion

The concept of the "natural community" has been borrowed from the sociologist and the ecologist as it has been developed and found useful in the study of rural and metropolitan communities. The concept has clear economic implications as the basis of the natural community, so conceived, is the trade area of the town or metropolis. It is trade which provides the major avenue of communication, the catalytic and organizing element of community. The concept coincides with the notion of town and metropolitan economy as developed by N. S. B. Gras. It also has useful parallels

with the theory of specialization by agricultural areas about the city as suggested by Von Thunen.

This general concept has been applied to what we have called the *super-metropolitan agglomerate* and its hinterland or *orbit*. We have assumed that this application is valid and that these same notions fit this larger natural community as well as the smaller ones. Sufficient materials and reason have been presented to at least indicate the validity of this approach to the study of economic relationships within this larger community.

The emphasis has been on the examination of the position of outlying *marginal* areas, lying within the orbit but near its periphery. The *marginal* status of these peripheral areas presents problems of trade orientation with the agglomerate and through this with the world market, of agricultural and industrial orientation and the problems of internal organization which this presents, and the problem of population orientation as this relates to living standards and the proper utilization of the labor force.

NOTES

LABOR PRODUCTIVITY AND SIZE OF FARM: A STATISTICAL PITFALL

LOUIS J. DUCOFF and Margaret J. Hagood have demonstrated that the net output per worker increases with the size of farm, as measured by sales in 1939.¹ They then state that "the conclusion is inescapable that a tremendous amount of underemployment and ineffective employment existed on the farms in 1939." The conclusion, however, is easily escapable—at least so far as their evidence goes—for they have committed the regression fallacy. The frequency with which this error is committed, as well as the importance of this example, justify a brief discussion.

The method used by Ducoff and Hagood is as follows:

1. Farms are classified by value of sales in 1939.
2. Within each class, non-labor costs are subtracted from value of sales to secure what we shall term labor return.
3. This labor return is divided by the number of laborers and entrepreneurs to secure labor return per worker.²

The defects of this procedure will become clear when we apply the method to a set of data and reproduce their results, and then, with the same method and data, contradict these results.

The data we assume are the tabulations of receipts from sales and non-labor expense (Table 1) and receipts from sales and labor force (Table 2). We could now proceed to compute the non-labor expense and the labor force for each class of receipts. We are spared this arithmetic, however, if we notice that by chance the entries in Tables 1 and 2 are exactly those of a bivariate normal distribution with $r = .7$, so we may proceed directly to the regression lines. Let

$$X_1 = \text{receipts from sales}$$

$$X_2 = \text{non-labor expense}$$

$$X_3 = \text{labor force}$$

Then, from the data in Tables 1 and 2,³

$$X_2 = .35 X_1 + 345, \quad (1)$$

$$X_3 = .000875 X_1 + .5625. \quad (2)$$

¹ Differentials in Productivity and in Farm Income of Agricultural Workers by Size of Enterprise and by Regions, Bureau of Agricultural Economics, August 1944.

² Adjustments are made to reduce the labor force to full-time male equivalents, but this refinement need not be considered here.

³ The tables indicate that $X_1 = \$1300$, $X_2 = \$800$, and $\bar{X}_3 = 1.7$ —approximately the values found in Ducoff and Hagood's study, and that $\sigma_1 = \$400$, $\sigma_2 = \$200$, and $\sigma_3 = .5$.

NOTES

TABLE I. RECEIPTS FROM SALES AND NON-LABOR EXPENSE ON A GROUP OF FARMS
(Hypothetical Data)

Receipts from sales (\$10) Less than	Non-labor Expense (\$10)										122- 123 more			
	32	38	44	50	56	62	68	74	80	86	92-98	104- 110	116- 116	116- 116
Less than 34	21	12	18	12	10	7	4	2	1	1	1	1	1	1
46-58	12	10	14	16	15	12	9	5	2	1	1	1	1	1
58-70	13	14	22	28	30	27	21	14	8	4	2	2	2	2
70-82	12	16	28	40	49	51	44	32	20	10	4	2	2	2
82-94	10	15	30	49	68	79	77	64	44	26	13	5	6	6
94-106	3	12	28	51	79	104	114	106	88	54	30	14	14	14
106-118	4	9	20	44	77	114	142	149	131	97	60	32	14	5
118-130	2	5	14	32	64	106	149	176	174	146	102	60	30	13
130-142	1	2	8	20	44	88	131	174	195	184	146	97	54	10
142-154	1	1	4	10	26	54	97	146	184	195	174	131	83	44
154-166			1	4	13	30	60	102	146	174	176	149	106	64
166-178				2	5	14	32	60	97	131	149	142	114	77
178-190						14	30	54	83	106	114	104	79	51
190-202							13	26	44	64	77	79	68	49
202-214								10	20	32	44	51	49	40
214-226									8	14	21	27	30	28
226 and more										9	12	15	16	14
										7	10	12	13	12

TABLE 2. RECEIPTS FROM SALES AND LABOR FORCE ON A GROUP OF FARMS
(Hypothetical Data)

Labor return per worker is

$$\frac{X_1 - X_2}{X_3} = \frac{.65 X_1 - 345}{.000875 X_1 + .5625}, \quad (3)$$

and selected values of (3) are given in Table 3. It will be seen that every essential characteristic of the findings in Table 4 of Ducoff and Hagoood's paper is reproduced.

Let us now use the same procedure but this time classify the farms by the size of the labor force and compute for each class of labor force the receipts from sales and non-labor expense. For this

TABLE 3. LABOR RETURN PER WORKER BY SIZE OF FARM, MEASURED BY SALES
(Hypothetical Data)

Sales of farm	Labor return	Number of workers	Labor return per worker
\$ 200	-\$215	.7375	-\$292
400	-85	.9125	-93
600	45	1.0875	41
800	175	1.2625	139
1000	305	1.4375	212
1200	435	1.6125	270
1400	565	1.7875	316
1600	695	1.9625	354
1800	825	2.1375	386
2000	955	2.3125	413
2200	1085	2.4875	436
2400	1215	2.6625	456

purpose we require also, data on the relationship between labor force and non-labor expense on each farm; we shall assume that it is identical with that in Table 1.⁴ We now find that

$$X_1 = 560 X_3 + 348, \quad (4)$$

$$X_2 = 280 X_3 + 324. \quad (5)$$

Labor return per worker becomes

$$\frac{X_1 - X_2}{X_3} = \frac{280 X_3 + 24}{X_3}, \quad (6)$$

⁴ That is, the missing table can be constructed by moving the title of the columns in Table 2 to the title of the rows in Table 1.

and selected values of (6) are given in Table 4. We observe that labor return per worker falls as the number of workers increases. By this alternative route we thus arrive at the former conclusion that labor is used inefficiently, but also at the very new conclusion that farms are too big.

TABLE 4. LABOR RETURN PER WORKER BY SIZE OF FARM,
MEASURED BY LABOR FORCE
(Hypothetical Data)

Number of workers	Sales of farm	Labor return	Labor return per worker
.5	\$628	\$164	\$328
1.0	908	304	304
1.5	1188	444	296
2.	1468	584	292
2.5	1748	724	290
3.0	2028	864	288
3.5	2308	1004	287
4.0	2588	1144	286

It must not be inferred that the foregoing example is a "freak" case. Indeed it can be shown that, in order to reach Ducoff and Hagood's results, it is sufficient to assume (i) that labor return per worker is *independent* of sales, and (ii) sales is the only variable that contains a large random component. The important fact is that they do not have enough information to determine the effect of size on efficiency: one must have data on the same farms over a period of years to isolate the relationship they seek.⁵

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THE FIXITY GRADIENT: A TOOL FOR FIXED AND VARIABLE COST ANALYSIS

PRODUCTION costs for any firm help determine the extent of its operations. As operations are planned toward the future, the size of costs must also be planned. Aids to the understanding of the nature of costs are analyses such as those based upon total costs, average costs, marginal costs, sunk costs, overhead costs,

⁵ For a discussion of the regression fallacy, and an ingenious method of avoiding it, see M. Friedman and S. Kuznets, *Income from Independent Professional Practice*, National Bureau of Economic Research, 1945, Ch. 7.

differential costs, and fixed and variable costs. The relative size of costs may vary as a result of changes in prices of production factors, technology, and in volume of production either from existing plant or a change in the size of plant.

The Problem

In this discussion fixed and variable costs will be used as a means of estimating production cost characteristics under varying production conditions. We shall want to know the effect on the relative size and nature of the costs of time over which the production related to these costs takes place. We shall want to determine a method by which fixity of costs can be measured. To do this the idea of the *fixity gradient* is developed. Its use is mainly as a tool for management and research. It provides a means of showing the flexibility of a firm in expansion and contraction, the elasticity of costs over periods of varying lengths of time, and an approximation of costs under future operating conditions. In this discussion an outline of the method is presented.

Meanings of Fixed and Variable Costs

There is not complete agreement as to which costs of a firm are fixed and which are variable. In a general sort of way there is agreement that fixed costs do not vary with changes in production while variable costs do. This is of little aid, though, because a cost might be fixed under one set of production conditions and variable under another.

Others may say that fixed costs are those which continue when there is no production. Would it not be possible, however, to sell all the physical assets and consequently approach zero in fixed costs? This might be the cheapest thing to do—particularly if production is discontinued for a relatively long period of time. At least one could, if he wished to, make the share of costs fixed approach zero or even the opposite of 100 percent (by making cost commitments ahead for all the productive factors).

Variable costs have also been considered the equal of marginal costs. The classification of a cost as variable is based upon its nature after it is incurred—the length of time over which it is spread. Marginal total cost is the increase in total cost which comes with a unit increase in output—part of which may be fixed and part variable. It becomes a point rate concept when the unit of production

becomes of infinitesimal size. It is not concerned with the length of time over which a cost is spread.

The approach to be used here, that of tying fixity of costs to time, is not new. Costs may be completely fixed or entirely variable, depending upon the length of time chosen as a base. The time period is considered to vary continuously from zero to infinity. Stigler states, "Normally the individual elements of plant will be fixed for a whole array of periods. The longer the short-run period, the greater will be the number of costs that become variable. Any particular classification of costs between fixed and variable is valid only for one specified time period."¹

Fixed-Variable Breakdown on Basis of Time

Fixed costs are those which are stationary for a particular production period of time, while variable costs are not, for the same period. Fixed costs are independent of output within this production period, while variable costs are a function of output although not necessarily proportional to it.

Fixed costs cannot be considered as being "just fixed" without reference to some particular standard or benchmark. They do not vary with production. Consequently they are spread over some period of time which may be a month, a year, or longer. If there is some deterioration to the production factor owned, interest as well as depreciation will make up its cost² per unit of time. Should an owned factor have an infinite life with no deterioration or obsolescence, which condition could only be approached, the only cost would be that of interest on the investment. Some cost items are contracted for periodically and may be fixed for the period. For others commitments are in effect made continuously for definite periods of time.

More explanation of the nature of these costs will indicate how the fixity or rigidity of costs varies with time. Costs of owning land will be more fixed than that of buildings or of equipment because its life approaches infinity. Should the land be leased for short terms the fixity of costs for land and buildings may be about the same for each. Labor as a group would be a relatively less fixed cost than owned land or buildings. Within the group, however, the range of

¹ George J. Stigler, *The Theory of Competitive Price* (Macmillan, New York, 1942), p. 170.

² The size of this cost per unit of time may vary with increments of time.

fixity may be greater than for facilities. Key employees—executive, clerical, and skilled workers—must be retained for long periods of time if the organization is to remain a going concern. At the opposite extreme there would be little fixity to the costs of unskilled day labor if it is assumed that they may be hired and released at the will of the firm. Similarly, there may be wide variations in fixity of costs for materials used or handled, for some may be contracted far ahead for long periods of time while others are purchased in the market as needed.

The relative fixity of a particular cost item may vary with different firms. An expanding firm may hesitate to release capacity, personnel, or materials supply during a temporary slump. The reverse may be true of a firm declining in size. Before any estimate of the fixed and variable cost relationship of a firm is made, therefore, a basis of expected future operations must be decided upon. If no major change in size of operations is anticipated, the division of costs may be made on the assumption that the firm will continue to be a going concern having about the same operating plant and volume of production. This would be the assumption for the usual estimate of fixed and variable costs based upon cost data of the firm. The method of analysis is not limited to this condition but may be applied also to conditions of change.

The share of total costs which is fixed is dependent upon the length of the production period used as a basis for determining it. It is a function of time and not of production. A cost is considered fixed if its size remains unchanged with fluctuations of volume during a designated period of time. Some costs might not exist the full length of the period but might necessarily continue beyond it to permit continued production for the full period. If, for example, a period of one year is used as the base, costs which must be paid beyond the end of the year, even with greatly reduced production, would be classified as fixed. The other costs would be variable. On the other hand if the production period used for determining cost shares were 100 years, perhaps all costs would be variable—of shorter duration than 100 years. As the period is allowed to approach infinity complete variability of costs is approached. The reverse is true for a short period of time approaching a point in time, for then all costs would be fixed. There is, therefore, no such thing as a fixed relationship between these two costs, fixed and variable, except as they are related to a period of time. Rather,

fixed costs may vary from all of the total costs for a period approaching a point in time to none of the total costs as time approaches infinity.

Costs in an operating firm will range from those spread over a day or more to a number of years. They will be of large and small totals, as represented by the area of the individual rectangles in Figure 1 which represent some of the cost items of a firm. They will

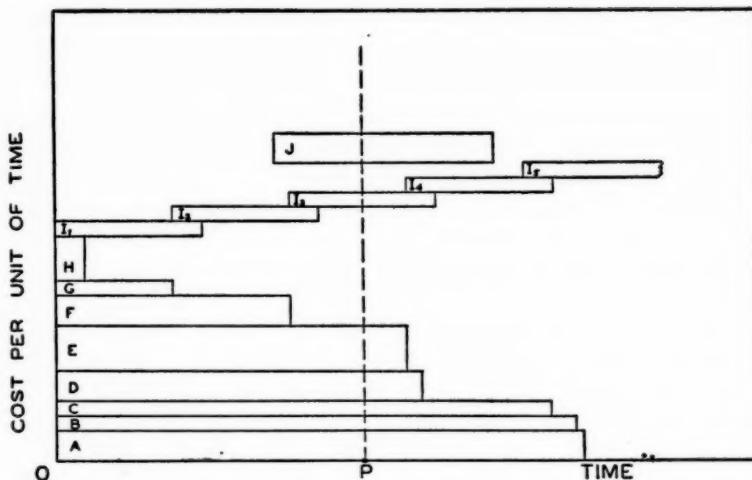


FIG. 1. ILLUSTRATION OF SIZE OF COSTS AND TIME OVER WHICH THEY MAY BE SPREAD.

be spread over varying lengths of time as indicated by the abscissa of each. The height along the ordinate pictures the separate cost per unit of time. The length along the abscissa represents the time over which the cost is spread. The product of height times length represents the total cost of an item. For a number of the items shown the costs are in existence at the beginning of the period O.³ Those which are not but start later are of two principal types. The first is a repeating cost such as a continuing series of commitments for supplies.⁴ The second is a new cost which was not in existence before.⁵ For any particular production time chosen, which may vary from O to infinity, the costs which extend beyond the period (as OP) are considered as fixed. Conversely, those extending for less than

³ Items A through I₁.

⁴ I₁, I₂, I₃, I₄, etc.

⁵ Item J.

the period (OP) are variable. In Figure 1 for the period OP costs A, B, C, D, E, I₃, and J are fixed and costs F, G, H, I₁, and I₂ are variable.

Factors Causing Variations in Fixed-Variable Shares

Several factors may cause variations in possible divisions of fixed and variable cost to exist at a particular time. The division is dependent upon the marginal production of the productive factors used. Those which are relatively less efficient, prices considered, will be displaced by the more efficient. Suppose, for example, that at a grain terminal elevator a grain freight car unloader with two men permits the unloading of wheat much more cheaply and quickly than the power scoop with several more men. Its purchase might involve a large fixed cost based on an investment of perhaps \$100,000. Much less unskilled labor would then exist as a variable cost. The marginal productivity⁶ of a factor directs its use and may cause costs to be more or less fixed as the factor has a longer or shorter cost life.

If the rate of production is to be altered, the division between fixed and variable costs is dependent upon the length of time over which the changed production will occur. If the expected change is for a relatively short time, most of the adjustment will come in variable cost factors. If expansion of volume will be required for a short time, little attempt will be made to expand plant and major equipment. Expansion will be mainly of raw materials, labor, and lighter forms of equipment. Expectation of increased volume for a long period of time might tend to have the opposite effect, resulting in relatively larger fixed costs than before.

The volume of the changed production may also change the division of fixed and variable costs. Anticipated large production over a lengthy period may make profitable the construction of buildings and equipment. Again the profitability of the change is based on the marginal analysis.

The division is also dependent upon changes in relative costs of the production factors. Relative scarcity and high cost of labor may cause a shift to more machinery. The reverse situation would also be true. With each of these changes the share of costs which is fixed will likely also change.

⁶ As by the reduction of all costs and revenues to an equivalent basis—as present worth.

A Fixity Gradient

As Clark explains, every item of cost has a mixed character.⁷ Some part of a cost item might be relatively fixed, some intermediate, and some relatively variable.⁸ Labor cost is such an item. So could be telephone and telegraph expenses, along with many other cost items. A grouping together of all costs of a firm certainly leaves a total figure of mixed characteristics.

Further consideration is necessary of the idea that the share of costs which is fixed may range from all at a point in time to none as infinity in time is approached. It may be possible to determine what costs of a firm are fixed for any one of a series of time periods—say one, two, three, and so on up to 50 years. A continuous curve, a *fixity gradient*, connecting these points would indicate the fixity of costs for any period of time. It of course would apply to the conditions to which the cost data used were applied. The cost data might be adjusted also to anticipated situations of expansion or contraction. The *fixity gradient*, the percentage which fixed costs are of total costs, shows the fixity for any point of time.

As the *fixity gradient* (g) is a function of time (t) the reading on the curve for any point of time shows what share of the total costs is fixed for that period—as, for example, 50 percent for a two-year period. A comparison of the reading on the curve for any two points shows differences of fixity—how costs might become more or less rigid, related to the production period, by shortening or lengthening the period in which a changed production will occur. The slope (dg/dt) at any point on the curve shows the same result by telling the effect which time has on fixity at that point.

Example with Use of Cost Data

A hypothetical case is presented to demonstrate how the *fixity gradient* of a firm may be determined. All costs are collected together into eight groups, A through H, for purposes of illustration⁹ (Table 1). The type of cost is indicated in parentheses following the

⁷ John Maurice Clark, *The Economics of Overhead Costs*, p. 51.

⁸ For that reason, a single cost item might be represented by several rectangles in Figure 1.

⁹ It is not the purpose of this article to state which items are to be regarded as costs. Different groups of cost items might be used for different analysis objectives. C. Reinold Noyes in his memorandum on "Costs in Relation to Output" in *The Relation to Cost to Output for a Leather Belt Shop*, Technical Paper No. 2 of the National Bureau of Economic Research, pp. 53-72, suggests bases for determining costs.

letter name. This descriptive name is given to indicate the basis for the determination of the fixed share of the costs for the different time periods.

The percentage of the cost considered fixed is estimated for each of the time periods at the current production rate.¹⁰ The dollar values shown are annual rates for the period indicated. Thus for one month the fixed cost is at an annual rate of \$190,800 compared to the total annual cost of \$256,000.

TABLE 1. CALCULATED FIXITY OF COSTS FOR A FIRM ACCORDING TO TIME PERIODS

Costs	Total	1 Month	1 Year	5 Years	10 Years	20 Years	20 Years Plus ¹
(Dollars) ²							
A (raw material)	100,000	80,000 (80) ³	20,000 (20)	4,000 (4)	2,000 (2)	1,000 (1)	1,000 (1)
B (wages)	50,000	10,000 (20)	5,000 (10)	1,000 (2)	500 (1)	250 (1)	250 (1)
C (manufactured parts)	40,000	40,000 (100)	16,000 (40)	3,200 (8)	1,600 (4)	800 (2)	800 (2)
D (salaries)	20,000	20,000 (100)	10,000 (50)	8,000 (40)	6,000 (30)	5,000 (25)	5,000 (25)
E (interest and taxes)	30,000	30,000 (100)	30,000 (100)	30,000 (100)	30,000 (100)	30,000 (100)	3,000 (10)
F (depreciation)	10,000	10,000 (100)	10,000 (100)	10,000 (100)	10,000 (100)	10,000 (100)	(0)
G (power)	5,000	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
H (telephone, telegraph, and postage)	1,000	800 (80)	600 (60)	500 (50)	400 (40)	300 (30)	300 (30)
Total	256,000	190,800 100	91,600 75	56,700 36	50,500 22	47,350 20	12,350 5
Percent Fixed							

¹ Assuming all equipment junked and new of same values to be built.

² Calculated at the annual rate (the figures are annual rates for the periods shown).

³ Number in parenthesis is percentage fixed.

As previously indicated, several factors determine the relative fixity as (1) the necessity of contracting ahead for goods or services, (2) the unwillingness to cut costs because the marginal long-time prospective return is greater than the costs even though at the moment production may be relatively small, and (3) the continuing nature of some costs which are almost completely unrelated to production volume.

¹⁰ These percentages are to be considered here as illustrative only.

For a period of time when the length of time approaches zero, all the costs are fixed as there is no opportunity for change, not even of raw materials or power. As time becomes available for making changes the costs become more flexible. For example, when a period of one month is used, raw material (A) cost is estimated¹¹ to be 80 percent fixed. Commitments must be made ahead so that supplies will be available when needed. Wages (B) are listed as 20 percent fixed as labor would not be dropped without notice. Manufactured parts (C) used in further production would be contracted for several months in advance of use. Consequently their cost is rated as 100 percent fixed for one month. Salaries (D) are considered as completely fixed for the period because these employees may be hired on an annual basis, and also they in many cases may be important men which the firm would employ even though volume might be temporarily lowered. Interest and taxes (E) and depreciation (F), the most rigid cost indicated, are definitely fixed for the period. Power (G) is the most variable cost listed, being completely variable for a one-month period. Telephone and telegraph (H) are rated as 80 percent fixed for a large share of the communications is not directly related to volume. Of all costs, fixed costs account for 75 percent for the one-month period.

When the period is extended to one year, 36 percent of the total costs are fixed. Most of the drop from the one-month period is accounted for by costs A and C (raw materials and manufactured parts) rated at 20 percent and 40 percent fixed, respectively.

The percentage which is fixed becomes 22 percent for 5 years, 20 percent for 10 years, and 18 percent for 20 years. If it is assumed that the physical plant becomes junk at 20 plus years the fixed costs become 5 percent or less. Without plant there would be no production operations so that the firm could be liquidated and all costs cease. This brings out the point made earlier that as the length of the period of reference increases fixed costs approach zero because the length of time over which costs are spread is less than the production period considered.

The *fixity gradient* curve is obtained by connecting the points¹² showing the percentage of costs which are fixed (Figure 2). In the

¹¹ In an actual case the nature of a cost can be determined by the records of the item plus the experience of the management.

¹² The number of points can be made to approach infinity so that a continuous curve is obtained.

case shown, costs are relatively fixed in the first year—particularly the first few months—and then taper off to 18 percent for the 20-year period and to yet smaller amounts for longer periods.

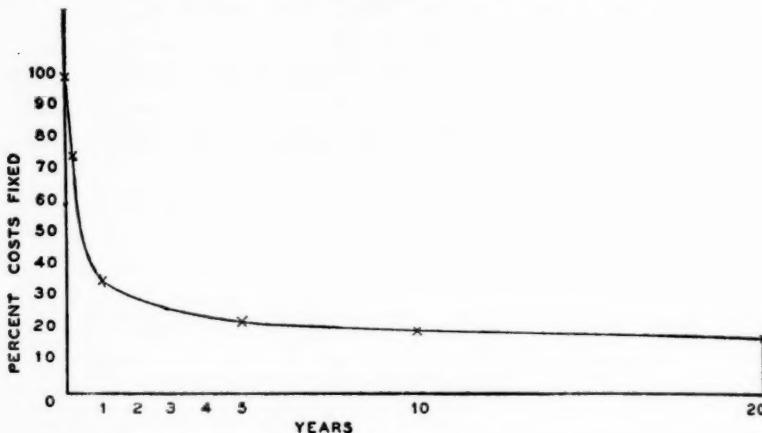


FIG. 2. CALCULATED FIXITY GRADIENT OF COSTS FOR FIRM IN TABLE 1.

Use of Fixity Gradient Curve

The major use which can be made of the *fixity gradient* curve is as an aid to management in planning future operations of a firm:

1. It aids in showing the rigidity of costs in a future production period, and in suggesting a possibility of cost adjustment.
2. With a given set of conditions and costs, it makes possible approximations of costs under future operating conditions.
3. The curve shows that the fixed and variable shares of cost are a schedule just as supply may be represented by a schedule.
4. The gradient helps explain why a firm may or may not hesitate to make a heavy long term fixed investment because of the uncertainty of the future—in terms of the market and related conditions.
5. It may act as a guide to a firm that wants to keep its costs within a given flexibility range—to keep its curve below a certain maximum or norm curve which may vary with business conditions.

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SIGNIFICANCE OF HOG-FEED PRICE RATIOS, ALABAMA*

PROFITS from hog production are materially affected by the cost of feed, inasmuch as feed represents the major expense item. The decision of whether to increase or decrease hog production, therefore, usually depends on the relation between the price of hogs and the cost of feed. Price ratios, which have been computed to show this relation, represent the relative number of bushels of corn (hog-corn ratio) or hundreds of pounds of peanuts (hog-peanut ratio) it would take to buy 100 pounds of live pork.

Various studies¹ have pointed out that the variation in the hog-corn ratio is the chief determinant of (subsequent) changes in hog supplies from year to year. In 1933 Wells² concluded that the same general type of analysis that explains the variation in total United States hog production would also explain the variation in hog production within an individual market district, a state, or a broad type-of-farming area. When the sectional changes in hog production were studied, however, certain differences in the response made to price ratios became apparent. In the South, for example, the response was found to be directly related to the acreage of corn, and indirectly related to the price of cotton during the period, 1921-1932.

In order to get a more complete explanation of farmers' response to specific hog-feed price ratios (hog-corn and hog-peanut) in Alabama, the relationship between hog-feed price ratios and commercial pork production has been analyzed. The hog-corn ratio in Alabama is typical of the low ratios that prevail in other Southeastern States.

* The authors are indebted to Professor B. F. Alvord, Head of the Agricultural Economics Department, Alabama Polytechnic Institute, for his constructive criticism of the manuscript and to Dr. T. W. Schultz, Professor of Agricultural Economics, University of Chicago, for his helpful analysis. Appreciation is also extended to J. C. Downing and E. L. Langford of the Bureau of Agricultural Economics for their beneficial suggestions.

¹ See—1. G. F. Warren, and F. A. Pearson, *The Agricultural Situation, Economic Effects of Fluctuating Prices*, New York, 1924.
2. S. Wright, *Corn and Hog Correlations*, U. S. Dept. of Agr., Bul. 1300, 1925.
3. G. C. Haas, and Mordecai Ezekiel, *Factors Affecting the Price of Hogs*, U. S. Dept. of Agr., Dept. Bul. No. 1440, Nov. 1926.
4. F. F. Elliott, *Adjusting Hog Production to Market Demand*, Ill. Agr. Expt. Sta. Bul. 293, 1927.
5. S. W. Russell, *Forecasting Hog Production and Marketing*, Journal of the American Statistical Association (M.S. 165 A) (Sup.) 1929.

² O. V. Wells, *Farmers' Response to Price in Hog Production and Marketing*, U. S. Dept. of Agr., Tech. Bul. No. 359, April 1933.

The Hog Enterprise in Alabama

The quantity of Alabama pork (liveweight) used for farm home consumption during the 21-year period, 1924-1944, averaged 98.5 million pounds, 53 percent of total production. Pork used annually for farm home consumption has varied little over the past two decades; on the other hand production for sale, although upward in trend, has varied considerably.

The size of the hog enterprise and the extent to which it is commercial vary among areas of the state. About 31 percent of the average pork production in the 1937-1941 period was produced in the 12 counties of southeastern Alabama. The 12 northern counties of Alabama represent the second heaviest section, producing 24 percent of Alabama's total pork supply in the 1937-1941 period. In most of the other areas, production for home consumption has been the dominant feature.

Corn, the most important feed used for hogs in Alabama, is produced in all areas of the state. Peanuts represent an important hog feed only in the southeastern part of the state, where approximately half of the feed used is hogged peanuts. It is estimated that in 1939 (a year of low yields) approximately 29 million pounds of pork, 12 percent of the state's total, were produced from peanuts.

Relationship of Ratios to Commercial Pork Production

During the 1924-1944 period, the hog-corn ratio in Alabama fluctuated similarly to the ratio in the Corn Belt states.³ The Corn Belt ratio, averaging 13.1, was consistently above the Alabama ratio which averaged 8.4.

The Alabama hog-peanut ratio averaged 2.0 during the period 1924-1944. The direction of year-to-year changes in hog-corn and hog-peanut ratios was generally similar. Although year-to-year changes in the hog-corn and hog-peanut ratios were generally similar, commercial pork production in the following year reacted slightly more to the hog-corn ratio movements during the periods in which the two ratios differed. This seems logical since hogs in most of the state are fed largely on corn, and since in the peanut section, if two litters a year are farrowed per sow, only one litter can be fed to any extent on peanuts.

Commercial pork production (total production less that saved

³ The Corn Belt includes: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

for home consumption) was closely related to shifts in the hog-corn ratios. A hog-corn ratio above average in one year generally was followed the next year by an increase in commercial pork production. Conversely, a hog-corn ratio below average generally was followed by a decrease in commercial pork production the following year.⁴

During 1924-1944, hog-peanut ratios averaging 2.0 or above were generally followed one year later by an increase in commercial pork production. Ratios below 2.0, however, were generally followed one year later by a decrease in commercial pork production.⁵

Shifts in the hog-corn ratio have given relatively good indications of changes one year later in commercial pork production. Yet, at a hog-corn ratio of 8.4 costs would not be covered. About 8.0 bushels of corn are generally required to produce 100 pounds of live hog, and the value of 2 to 3 bushels of corn in addition to feed costs is usually considered necessary to pay the other costs of labor, investment, and losses.

The response of Alabama hog producers to hog-corn ratios during the 20-year period 1925-1944 is shown in Table 1. The ratio in one year did not significantly affect the production of pork for home use in the following year. On the other hand, production of pork for sale one year following above-average ratios was approximately 115 million pounds, compared with about 60 million pounds in years after below-average ratios.

The production of pork for sale might be explained in the 10 years in which the ratios averaged 10.0. The producer would receive the value of about 2 bushels of corn above feed costs. In the other 10 years of this period, however, the producer of commercial pork would seem to have had little incentive to produce pork for sale, since the ratios that averaged 6.7 indicated that he would not receive enough from the pork to cover even his feed costs.

⁴ Hog-corn ratios were above average in 10 of the 20 years studied. The above-average ratios in 8 of the 10 years were associated with increases in commercial pork production in the following year.

In 10 of the 20 years the ratio was below average. The below-average ratios in 6 of these 10 years were associated with decreases in commercial pork production in the following year.

⁵ Hog peanut ratios were average or above in 13 of the years studied. The average or above-average ratios in 10 of the years were associated with increases in commercial pork production in the following year.

In 7 of the years the ratio was below average. The below-average ratios were associated with decreases in commercial production the following year in 5 of the 7 years.

The production of hogs for market in years in which the ratios indicated that commercial pork production was unprofitable needed further investigation. Unless this paradox can be explained, the

TABLE 1. AVERAGE PRODUCTION OF PORK FOR HOME USE AND FOR SALE ONE YEAR FOLLOWING INDICATED PRICE RATIOS, 1925-1944, ALABAMA

Hog-corn price ratio	No. of years	Average ratio	Average production of pork for home use one year later	Average production of pork for sale one year later
Below average	10	6.7	1,000 pounds 97,794	1,000 pounds 60,396
Above average	10	10.0	99,541	114,778
Average	20	8.4	98,668	87,587

ratios, except for their use as indicators of future production, lose significance as guides to the profitability of feeding or selling feed. The explanation requires examination of the factors affecting hog prices and feed prices in Alabama.

Factors Affecting Alabama Hog-Feed Price Ratios

Hog Prices—The average price received for hogs by Alabama farmers (1924-1944) was \$7.79 per hundredweight, 82 cents or 10 percent less than the \$8.61 per hundredweight received by Corn Belt farmers. Although Alabama hog prices averaged slightly lower than Corn Belt hog prices, yearly changes in Alabama and Corn Belt hog prices generally have been similar. In northern Alabama where a large quantity of commercial pork is produced from corn, hog prices averaged about the same as Corn Belt prices. In southeastern Alabama somewhat lower prices reflected a discount for soft pork.

Corn Prices—Alabama corn prices, however, have generally been considerably higher than Corn Belt prices. The explanation of the low level of Alabama's hog-corn ratio, therefore, lies largely in the corn situation.

The similarity in fluctuations of Alabama corn prices to those of the Corn Belt and of the United States indicates that Alabama corn prices are largely dependent upon the corn situation in the country as a whole. The level of feed grain prices in the country as a whole is largely determined by the relationship between feed

supplies and livestock numbers and by the general level of business conditions. Differences in prices between areas are largely cost items involved in transporting corn from surplus to deficit areas. Prices are lowest in areas of surplus feed supplies and highest in deficit areas. Alabama has been characteristically a deficit feed area. From 1924 to 1944 Alabama corn prices averaged 95 cents per bushel, compared to an average of 67 cents per bushel in the Corn Belt. The difference in the two regional prices during this period averaged 28 cents per bushel, 2 cents above the current freight rate from Chicago to Montgomery of 26 cents per bushel in carload lots.

Although corn prices in Alabama have fluctuated in a pattern very similar to that of fluctuations in the Corn Belt and in the United States, the difference between the Alabama price and the United States price is not constant from year to year. This difference is closely related to Alabama's supply of corn per animal unit in relation to the country's supply per animal unit. Since the bulk of the country's supply is in the Corn Belt, data on the United States supply would reflect the Corn Belt influence to a large extent. From 1926 to 1944 the Alabama corn price averaged 22 cents per bushel higher than the United States price. In the 8 years in which the Alabama corn supply per animal unit was considerably smaller than the United States supply per animal unit, the Alabama price averaged 31 cents per bushel higher (Table 2). In the 3 years in which the Alabama supply per animal unit was greater than the supply per animal unit for the whole country, the margin averaged 5 cents per bushel. Year-to-year changes in the difference in corn supplies and in the margin of prices between Alabama and the nation indicate that as Alabama becomes more self-sufficient in corn and other feeds the price difference narrows and largely ceases to exist.

To assure an amount of pork needed to supply family needs, there is a tendency for corn to be fed to hogs regardless of the relationship between the price of hogs and the price of corn. For commercial pork production, however, price relationships between the price of hogs and the price of corn become important. If the value of the 100 pounds of pork is no greater than the value of the 8 bushels of corn, it would pay the producer to sell the corn rather than feed it. In addition, the Corn Belt producers require a margin above feed costs to pay other production expenses. As a result, when the hog-corn ratio falls below 11.6, pork production (hog-

marketings) in the Corn Belt declines. Although in Alabama the ratio has seldom been as high as 11.6, commercial pork production continues.

The question arises whether the reported Alabama corn prices are representative of actual prices that the producer could receive

TABLE 2. FARM PRICES OF CORN IN ALABAMA AND THE UNITED STATES AND CORN SUPPLIES PER ANIMAL UNIT IN ALABAMA AND THE UNITED STATES, FOR SELECTED PERIODS, 1926-1944*

Relation of Alabama corn supply per animal unit to United States corn supply per animal unit	Num- ber of years	Supply of corn per animal unit			Farm price of corn		
		Ala- bama	United States	Dif- ference	Ala- bama	United States	Dif- ference
(Bushels)							
Below normal ¹	8	16.4	21.8	-5.4	1.04	0.73	+0.31
Normal ²	8	18.8	20.6	-1.6	0.80	0.60	+0.20
Above normal ³	3	20.1	15.9	+4.2	0.87	0.82	+0.05

* Compiled from Agricultural Statistics, U.S.D.A., and Alabama Crop Reporting Service.

¹ -3.0 or more.

² 0 to -2.9.

³ Above 0.

if he chose to sell his corn. On the basis of the average hog-corn ratio in Alabama (based on reported prices), it would pay farmers to sell their corn rather than feed it to hogs.

Apparently reported prices of corn for Alabama and other Southeastern States are higher than the actual prices that farmers could obtain in the event they chose to sell their corn rather than to feed it to livestock. This conclusion is based on (1) the small quantity that commercial corn is of total corn produced; (2) the large portion of commercial corn that is used for human consumption; (3) the small quantity of feed purchased by farmers; and (4) the lack of adequate storage facilities at market points.⁶

⁶ Schultz suggested that Alabama and other Southeastern States might have a situation for corn somewhat similar to the two-price system for barley in the northern plains states, where in most years there are in fact two prices for barley: (1) barley that can be used for malt and (2) barley that enters feeding channels. Malt barley of good quality at present returns 20 to 25 cents more per bushel than barley for feed.

(Correspondence with Dr. T. W. Schultz, Professor of Agricultural Economics, University of Chicago.)

Corn prices reported for the Southeastern States have been based on a sample of sales considerably smaller than for the Corn Belt states. For example, only 8 percent of the corn produced in the Southeast was sold during the period, 1920 to 1943, as compared to 22 percent in the Corn Belt (Table 3). A detailed analysis for a selected Southern State (Alabama) and a selected Corn Belt State (Iowa) during this period revealed these same relationships that characterized the two regions.

TABLE 3. AVERAGE ANNUAL PRODUCTION AND FARM DISPOSITION OF CORN PER STATE FOR THE SOUTHEASTERN STATES* AND CORN BELT,** 1920-1943¹

Region	Production	Farm household use	Feed & seed	Sold
(1,000 bushels)				
Southeastern States*	30,584	2,593	25,589	2,402
Corn Belt**	154,481	130	119,683	34,668
<i>Per cent of total</i>				
Southeastern States*	100	8	84	8
Corn Belt**	100	1	77	22

* Alabama, Mississippi, Georgia, Florida, and South Carolina.

** Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

¹ Farm Production, Farm Disposition and Value of Corn, 1909-41, Dec. 1944 U.S.D.A., B.A.E., Crop Reporting Board; Agricultural Statistics, 1944, U.S.D.A., B.A.E.

Another factor affecting reported corn prices in Alabama is that corn sold to food manufacturers for meal and grits has been, for the most part, selected high quality ears, and would therefore bring a higher price per bushel than would the farmer's entire crop of corn.⁷

Sales of corn by farmers to other farmers are limited because the typical Alabama farmer buys little feed of any kind. Largest purchases of feed per farm in the 1929 Census were reported by dairy farmers. On dairy farms feed expenditures averaged \$1,739 and consisted largely of commercially-mixed high protein feeds. Poultry, animal-specialty, and stock-ranch farms were also relatively large feed purchasers. In contrast cotton farmers, constituting more

⁷ Available data indicate that a sizable portion of the commercial corn is used for human consumption. For example, from 1935-1941 approximately two-fifths of Alabama's 5 million bushels of commercial corn was used for human consumption, whereas the remaining three-fifths was used for feed and seed.

than three-fourths of those reporting, bought feed valued at only \$57 per farm.

About a decade ago, Inman⁸ discussed some of the limitations of marketing corn in Alabama. One of the most important was the shortage of storage space for bulk corn. As a result, only a small quantity of Alabama corn, chiefly from northern Alabama, was used by manufacturers and that was used during the six-month period from October through March. Other factors were weevil damage, crosses between white and yellow varieties, and lack of grades.

Changes have occurred in the past 10 years, particularly with respect to an easing of the storage situation. Yet, insofar as these conditions do continue to be limiting factors to corn marketing, they prevent the reported prices from reflecting the average farmer's actual opportunity to sell corn.

Because farmers in Alabama buy or sell little corn, hog-production would seem to depend not on the hog-corn ratio, which reflects reported corn sale prices, but on the supply of corn available on the individual farms and on the comparative profitability of feeding such corn as is available to hogs, chickens, or other livestock. The fact that fluctuations in hog production in Alabama correspond to fluctuations in the hog-corn ratio is significant. However, the general level of the reported hog-corn ratio is limited as a direct guide in determining whether profits can be maximized by feeding or selling for cash.

Peanut Prices—The hog-peanut price ratio has been calculated from the reported farm prices of hogs and of harvested peanuts. The price received for harvested peanuts reflects very largely the demands of consumers for peanut butter, peanut candy, salted and roasted peanuts, and the quantity of peanuts available for this edible trade.

The use of such a peanut price in the calculation results in a hog-peanut ratio that does not accurately reflect the price ratio between hogs and hogged peanuts. Peanuts are not hand-fed to hogs as is corn. By hogging-off a field of peanuts, the expenses of digging, stacking, and picking are eliminated. Hogged peanut prices, however, are unavailable since hogged peanuts enter the market only indirectly.

⁸ Buis T. Inman, Purchases of Feeds and Grains in Alabama, Alabama Agricultural Experiment Station Circular 77, 1937.

Although the use of prices of harvested peanuts in the hog-peanut ratios may not impair the value along with the hog-corn ratios as indicators of future production, the ratios are at best a crude guide in determining whether it would be more profitable to dig and sell peanuts or use them as hog feed. For example, from 1924-1944 the Alabama hog-peanut ratio averaged 2.0. This means that 200 pounds of harvested peanuts were equal in value to 100 pounds of live pork. Since 300 to 360 pounds of hogged peanuts are required to produce 100 pounds of live pork, the producer seemingly would find it more profitable to harvest and sell the peanuts, provided harvesting and other costs were not too high.

In order for the value of 100 pounds of pork to equal the value of the peanuts (at harvested prices) required to produce that pork, the producer would need a ratio of 3.0 to 3.5. Yet in only 1 year in the 35 year period, 1910-1944, has the Alabama hog-peanut ratio been as high as 3.0.

The decision to dig or to hog off peanuts, therefore, is only indirectly affected by the relative prices of hogs and of harvested peanuts. There are limiting factors that may in some instances prove more influential on the farmer's decision to dig or to hog off peanuts than the price ratio between hogs and harvested peanuts.

The problems of fencing and watering, as well as of obtaining enough hogs for the peanut acreage available prevent complete flexibility of shifts from *digging to hogging* at harvest time. Late season shifts in plans from *hogging to digging* are handicapped by the problems of obtaining labor for harvesting and of disposition of unfinished hogs on hand.

The higher average yield of peanuts relative to other concentrate feed crops in southeastern Alabama is probably the major reason accounting for the large quantity of peanuts that are hogged in this area compared to other areas of Alabama. Total pounds of digestible nutrients (after deducting seed requirements) produced from an acre of peanuts during the 5-year period, 1937-1941, averaged 704 pounds as compared to 507 pounds from corn. Peanuts, therefore, produced over a third more feed per acre than corn. Although corn produces less feed per acre, corn is essential for hand feeding the pigs before the peanuts are available, as well as for finishing the hogs in some cases.

Since the hogs must usually be fed from corn, in addition to other feeds or purchased concentrates, until the peanuts are ready

for hogging off, the supply of corn available in the area would logically influence the number of sows farrowed and thus the number of pigs on hand. Since the supply of corn for the following year is fairly well known at corn harvest time, the decisions regarding the breeding of sows are probably made soon afterwards. These decisions are reflected in the number of hogs on farms the next spring and summer. The number of these hogs would logically influence the acreage of peanuts planted for hogging. However, the reaction to expand the hog business is limited by the availability of feed and the decision to contract the hog business must consider alternative uses of the feed.

Estimated gross returns per acre from dug peanuts in 1943 in the Southeastern Coastal Plains of Alabama were \$62 as compared to \$35 for hogged peanuts. After deducting estimated total expenses for dug peanuts and hogged peanuts, (including fertilizer, seed, labor, machinery, and mule work) net returns per acre for dug peanuts were \$26 as compared to \$14 for hogged peanuts. Net returns for dug peanuts were, therefore, 85 percent greater than for hogged peanuts. The returns over a period of years from the entire cropping system, however, may well be greater with hogged peanuts than with harvested peanuts, because of the increased productivity brought about by hogged peanuts.

Conclusions

The reported Alabama hog-feed ratios are considerably lower than Corn Belt ratios. However, the similarity in fluctuations of Alabama ratios and Corn Belt ratios indicates that Alabama is a part of the general hog and feed situation.

The low Alabama hog-corn ratio results from using reported corn prices that seem too high to indicate actual prices obtainable by the farmer for feed corn. Reported prices of corn for Alabama and other Southeastern States are based on a small part of the state's corn supply since only a small portion of the production normally enters marketing channels. In addition, much of the corn sold is used for human consumption and is of better-than-average quality.

The hog-peanut ratio is also too low to serve as a direct profit guide in deciding whether to feed or sell. This results from using prices of harvested peanuts (used chiefly for edible purposes) since hogged peanuts enter the market only indirectly.

Obviously, these ratios do not reflect the farmer's actual feed

situation and do not serve as direct guides to the producer in determining whether or not he could make more profit from feeding or from selling his feed.

However, if conditions and relationships in the future continue as in the past, the direction of future shifts in hog production in the state may generally be determined a year in advance from existing ratios. Such forecasts of the direction of future changes in production could be of value to the individual farmer as he appraises his own feed and hog situation.

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THE INCOME ELASTICITY OF MILK

IN THE February, 1945, number of this JOURNAL, R. F. Patzig and Gideon Hadary presented the results of a study in three small Midwestern cities, in which they concluded that income differences failed to account for the differences in family consumption of milk. This conclusion is so much out of line with that of the big Consumer Purchases Study that many have wondered if it could be a right conclusion, and several have raised the question with the writer. Accordingly, he asked the authors of the note for the privilege of looking over the original data of the study. What follows are mainly some facts not included in the note which may account in a measure for the differences in results of the two studies.

The readers may remember that Patzig and Hadary made some postwar applications of their results, concluding that "fluid milk consumption has reached a maximum *insofar as effect of employment on consumption is concerned*," and predicted a decline in consumption with declining employment after the war. This, of course, was what was generally expected as late as last August. But in fact milk consumption seems to have increased pronouncedly since then, in spite of a small increase in unemployment, and speculation is rife as to the reasons for it.

The first simple thing that the writer has done with the data for the Midwestern cities, Madison and Racine, Wisconsin, and South Bend-Mishawaka, Indiana, has been to put them as nearly as pos-

sible in the same tabular form as the *Consumer Purchases* results,¹ and likewise as those of the BLS study of *Money Disbursements of Wage Earners and Clerical Workers*.² The BLS data are for eight cities in the North Central States, ranging from Milwaukee to Cincinnati, Cleveland and Columbus. The Consumer Purchases data are for all types of non-relief families combined in "small cities in the North Central States." The consumption figures are all per month per consumption unit, the conversions being based in the BLS data.

Patzig-Hadary (1940-42)		BLS Study (1934-36)		Consumer Purchases Study (1936)	
Income groups (per capita)	Con- sumption (qts.)	Income groups (per consump- tion unit)	Con- sumption (qts.)	Income groups (by family)	Con- sumption (qts.)
Under \$400	11.9 (c)	Under \$400	8.5 (b)	Under \$1,000	6.6 (a)
\$400 to \$600	12.9 (c)	\$400 to \$600	10.4 (d)	\$1,000 to \$2,000	13.1 (f)
\$600 & over	13.1 (h)	\$600 & over	11.5 (g)	\$2,000 & over	19.0 (i)

The Patzig-Hadary incomes are per capita and the BLS incomes are per consumption unit, that is, with adjustments for age and sex. The families in the BLS study averaged 1.17 persons per consumption unit, the range being from 1.19 for the lowest-income group to 1.13 for the highest. Thus \$400 of income per consumption unit was equal to \$336 per capita, and \$600 per consumption unit to \$530 per capita. The income groupings on a family basis in the Consumer Purchases Study range still farther below those of the Patzig-Hadary study—\$1,000 of income per family equals only \$225 per capita, and \$2,000, only \$625 per capita. Few of the family incomes in the Patzig-Hadary study were below \$1,000—they were all for families making income tax returns. The bulk of the income returns were between \$1,200 and \$3,000. The average for the BLS group was \$1,550.

Patzig-Hadary found that below \$1,000 of family income, many of the families did not buy milk regularly and consumption declined rapidly. Probably the lowest Consumer Purchases group was largely made up of such families; hence the high elasticity appearing in the lower part of the schedule. The lowest BLS group probably included a good many of this description. Using income tax returns probably introduced further elements of selectivity and produced some bias

¹ *Family Food Consumption and Dietary Levels*, Misc. Pub. 452, U.S.D.A. in co-operation with the WPA, Table 30.

² BLS Bul. 636, Table 7.

upward. Probably the only figure which is seriously out of line in the three columns is that for the upper group in the Consumer Purchases Study, and this may well exemplify the tendency indicated by Patzig-Hadary for subjective estimates to be biased upward in the upper-income brackets. Perhaps some of this is present in the middle Consumer Purchases group, and possibly in the upper BLS group. *If comparable income figures per consumption unit were available to go with the nine consumption figures in the table, they would appear in the order from (a) to (i) as designated in the table, and make a fairly consistent income elasticity curve except for the (i);* and it would have a good deal of elasticity at the lower end.

Even though when grouped as in the table, the Patzig-Hadary data appear to show appreciable correlation with income, the coefficients are very low. The Patzig-Hadary note reported only +.08 on a per-capita basis, and +.20 on a family-income basis. No doubt the coefficients would be also low in the other two studies. As stated in the note, other things than income mostly explain differences in milk consumption. Following is a frequency table showing the range for the three income groups in the Patzig-Hadary study:

	Under \$400	\$400-600	\$600 and over
	Number of families using milk per capita per month		
Under 4 quarts	11	8	16
4- 8 quarts	38	36	79
8-12 quarts	45	47	79
12-16 quarts	28	42	63
16-20 quarts	12	12	35
20-24 quarts	0	3	11
24 plus quarts	1	0	9

Part of these differences are due to differences in age and composition of families, which it is not possible to adjust for, since the data collected by Patzig-Hadary included only numbers in the family. But more of it is surely due to differences in consumption habits. Obviously a large number of families who could afford to consume more milk are using less than 10 quarts of milk per capita per month. It may well be that many of these families are consuming more milk now than a year ago, now that Order 79 has been removed and the workers are still at work. In many cities, the kind of dealer rationing practiced under Order 79 restricted workers' families to the amounts of milk they consumed before they came to be so fully employed. Other explanations advanced are that the returning veterans appear to be heavy drinkers of milk, and that

the school lunch and in-plant feeding programs are having a pronounced effect. Even the shortage of other beverages has been mentioned in this connection!

JOHN D. BLACK

CATTLE-HOG PRICE AND BEEF-PORK CONSUMPTION RATIOS

IN THE November 1945 issue of this Journal, Mr. Szatrowski compares his analysis of beef and pork consumption and price relationships with the estimates for 1950 contained in "What Peace Can Mean to American Farmers, Post-War Agriculture and Employment" (USDA Misc. Pub. No. 562), and concludes: "On the basis of the above analysis it would appear that the combination of the four beef and pork consumption and price estimates given by the U.S.D.A. is not a likely combination." While heartily endorsing the idea of analysis which compares ratios between prices and consumption of related commodities, the present author is not in full agreement with Mr. Szatrowski's findings, either for the historical period of record or for 1950. The likeliness of any estimate for 1950 depends largely upon the particular past period used as reference.

The present author presented a graphic analysis of price and consumption ratios for all major meats and for some fruits and grains in 1943.¹ There appeared to be a clear relation between the cattle-hog price and the beef-pork consumption ratios in the United States, with one relation for the 1899-1914 and 1934-39 periods and another relation for the 1919-33 period. In the latter period, cattle prices were lower in relation to hog prices at a given beef-pork consumption ratio, or beef consumption was lower in relation to pork consumption at a given cattle-hog price ratio, or both, than in the 1899-1914 and 1934-39 periods. These results might be interpreted as a shift against cattle, or toward hogs, in the 1919-33 period as compared with either earlier or later periods. Without introduction of other variables, correlation ratios approximating .9 were obtained—somewhat higher for later periods, somewhat lower for earlier periods. This analysis fits about equally well for 1940-42, except that the 1940 figures require some revision of the extreme

¹ Demand Interrelations for Selected Agricultural Products, by Marion Clawson. *Quarterly Journal of Economics*, February 1943. Vol. LVII, p. 265.

left end of the curve for 1899-1914 and 1934-39. For 1943 and 1944, when rationing and price control were major factors in consumption and price ratios, the relationships differed markedly from any previous one since 1899.

"What Peace Can Mean to American Farmers, Post-War Agriculture and Employment" estimates that in 1950 the per capita consumption of beef and veal will be 71 pounds, of pork and lard 96 pounds; that the farm price of beef cattle will be \$10.25 per 100 pounds, and of hogs \$11.25. These figures are in slightly different terms than used in the earlier analysis. They are approximately equal to 64 pounds of beef (excluding veal) and 80 pounds of pork (excluding lard), or a beef-pork consumption ratio of .80. The farm prices are approximately equal to \$11.25 per 100 pounds of all cattle and \$11.75 per 100 pounds of all hogs purchased by wholesale slaughterers, or a cattle-hog price ratio of .96. (The earlier analysis had been in terms of prices paid by all wholesale slaughterers, for reasons to be explained later.) A beef-pork consumption ratio of .80 and a cattle-hog price ratio of .96 are somewhat higher than prevailed in the 1919-33 period, but substantially lower than prevailed in the 1899-1914 and 1934-39 periods (and in 1940-42 also). That is, either beef consumption or cattle prices or both have been estimated to be somewhat higher, relative to pork consumption and hog prices, than was the case in 1919-33; but much lower than in 1899-1914 and 1934-39. The likeliness of the 1950 estimate depends, therefore, on which historical period is taken as a reference point. On the basis of both number of years and recency, the 1899-1914 and 1934-39 periods would seem superior. If this be chosen, then Mr. Szatrowski's conclusion that "If the U.S.D.A.'s estimates of the beef and pork prices became a reality then one would expect more beef to be consumed (in relation to pork) than the consumption based on U.S.D.A. estimates" is sustained. However if one chooses the 1919-33 period as a basis for comparison, the estimate of cattle prices and beef consumption in 1950 is high, compared with hog prices and pork consumption. In either case, one can agree with Mr. Szatrowski that further analysis is needed to decide which of the four estimates (beef consumption, pork consumption, cattle price, hog price) is out of line; the ratio type of analysis merely indicates conformity or discrepancy among ratios, but does not identify the source of any discrepancy that may exist.

Such discrepancy as exists between the present author's earlier

analysis and the longer article by Mr. Szatrowski² is largely explainable by the cattle price series used by the latter. The per capita consumption data, and hence the ratios, were identical. Szatrowski used the "average wholesale prices of beef steers at Chicago." The number of beef steers slaughtered annually does not bear a constant ratio to the total cattle slaughter, nor do prices of beef steers bear a constant ratio to the prices of all cattle slaughtered. The only weighted average prices for all cattle, of which the author is aware, are the U. S. average farm prices for beef cattle and the average price paid by all wholesale slaughterers for all cattle slaughtered. These two series run very closely together, the farm price being exceeded by the price paid by all slaughterers by \$.50 to \$1.00 per 100 pounds, the exact margin being somewhat wider in periods of high than in periods of low cattle prices. Data on the cost to all wholesale slaughterers are available for several years prior to the beginning of the series on farm prices, and hence are preferable for a longer historical analysis. The prices paid for all classes of beef steers in Chicago do not bear a constant relation, either in absolute or in percentage terms, to the cost of all cattle purchased by wholesale slaughterers. The price of beef steers has varied from 1.10 to 1.61 times the price of all cattle; there has been an upward trend in this ratio, but with many irregularities. Beef steers were particularly high in price, relative to all cattle, in 1935 and 1937. The drouths of 1934 and 1936 meant relatively few finished cattle a year later, but many thin and poor cattle; hence, the price ratios were abnormal.

An analysis which uses per capita consumption of all beef should use a price which represents all cattle slaughtered. In Szatrowski's analysis, the price of beef steers is not a reliable index of the price paid for all cattle, and hence does not reflect what consumers paid for all the beef they ate. When the price of steers is high relative to the price of other cattle, consumers tend to shift from the higher to the lower grades of beef; and conversely when steer prices are low relative to the price of other cattle. Thus, his price ratios are not always reliable, and the results of his analysis reflect the changing relation of the price of beef steers to the price of all cattle as well as the actual price-ratio-consumption-ratio relationship. This is particularly serious since the most abnormal ratios are near the

² Time Series Correlated with the Beef-Pork Consumption Ratio, by Zenon Szatrowski. *Econometrica*, January 1945. Vol. 13, No. 1.

end of his period of analysis, and hence influence trends markedly. When these trends are extended to 1950, they are magnified still further.

Szatrowski uses the wholesale price of hogs at Chicago, which is nearly identical with the cost of all hogs purchased by wholesale slaughterers, and hence introduces no discrepancy.

The present writer must confess a strong preference for simpler graphic methods of analysis, rather than for relatively involved mathematical methods. In the present instance, the use of formulae which involve several constants in the analysis of annual data for 20 years seems scarcely defensible. The arbitrary division of the entire period into two parts, in one of which the relationships were much closer than in the other, gives a false sense of precision. The use of refined mathematical procedures does not offset the use of unrepresentative data, as the present example shows, and may even conceal serious errors. A simpler graphic analysis, with careful attention to the data for each year, may be more reliable—what is lost in precision of formulae and exact computation may be more than made up in careful scrutiny of relationships and absence of misleading assumptions. The deviations of individual years could be analyzed in terms of other variables for which plausible arguments of logical relationship could be found, and much of the deviation “explained” in this way. But for so few years, when the basic relationship is known imperfectly, such a procedure seems scarcely worthwhile and may give a sense of false accuracy.

This Note may well close with a little speculation as to the significance of the price-ratio-consumption-ratio type of analysis. If the quantities are those actually eaten by consumers and if the prices are those actually paid by consumers, then the results measure consumer preferences or choices. By assuming given total consumer expenditures for both products, one could construct some approximation to an indifference curve for the two products. In both Szatrowski's longer analysis and the present author's earlier analysis, the prices are not those paid by consumers, nor even for the same product as consumers purchased. The prices were for animals, not meat, and hence include varying quantities of “by-products.”³ This is especially important for hogs, since lard is such an important part of the value of the hog. The price of the animals

³ Szatrowski refers to his prices as “beef” and “pork,” which is inaccurate. “Cattle” or “steers” and “hogs” are preferable.

is for a point of sale much removed from the ultimate consumer; substantial costs are incurred after the animal leaves this point and before the meat is ready for the consumer. There is undoubtedly a fairly high correlation between the price paid for the animal and the price the consumer pays for the meat; but this relation is not perfect and, even if it were, the presence of relatively fixed marketing and processing costs might seriously change the elasticity of the curve of price-consumption ratios. On the other hand, price-ratio-consumption-ratio analysis which used quantities produced and prices received by farmers would be useful as a guide to farmers' production planning. The prices used in these two analyses approach this more nearly than they do consumer prices. If the quantities were amounts which could be produced with the same resources, but under different methods of production, then the analysis would essentially be one of production preference or alternatives.

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MAKING ECONOMICS UNDERSTANDABLE*

MORE than any other group of economists, American agricultural economists have a habit of leaving their ivory towers—to the distinct advantage of the country as well as themselves. Agricultural economists of 20 years ago led the way in describing and analyzing the economic troubles of farmers after the first world war. In large measure their researches provided the guideposts for farm legislation under the New Deal. Today a new crop of economists seeks to steer the nation in its farm policy decisions. All 18 prize-winners in the recent farm price policy contest of this Association are professional agricultural economists.

The scientist—economic or otherwise—who applies his principles to the current facts of life soon finds that he must deal with the public. He can't sit back and merely advise political leaders and administrators. Not in a democracy. The people will demand that he talk directly to them. That means he must write for popular consumption.

When his writings are ignored or misinterpreted, the economist

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feels hurt and looks around for someone to blame. Sometimes the editor should take the rap. More often the economist failed to present his ideas clearly. Instead of retreating to the cloister of professional writing, he would do well to study why he didn't make contact with the minds of his readers.

Some of the reasons why much that is written on economic subjects fails to "get across" will appear in what follows. This article doesn't pretend to give all the rules for good writing. It aims to show five ways in which economists can improve their writing for the general public. Talent has little to do with good informative writing—however much it may have to do with poetry and other types of "artistic" writing. Straightforward exposition *can be learned*. If your ideas are worth writing about they are worth writing well about.

I. Organization

Contrary to a widely-held belief, technical words aren't the biggest stumbling block to comprehension of economics by laymen. Most readers bog down because the writer has failed to present his thoughts in logical sequence—logical from the viewpoint of the reader, not the writer. Essentially, this means proceeding from the known to the unknown.

There are no mechanical rules that will always work for organizing a piece of writing. The framework on which you hang your story must fit the subject matter of course. It should also fit the reader's tastes and background. The implication is clear: Know your readers; know whom you're aiming at. Then tell the story in the sequence best suited to his grasping the ideas. Tell it the way you would relate it by word of mouth to a "typical" reader. Remember that the reader can't ask questions. So you must anticipate his questions as they would naturally arise from what you've already told him.

After years of study in a rigorous discipline, the economist learns many short cuts which he follows in his thinking. These short cuts carry over into his writing for technical publications. Articles in this JOURNAL, for example, frequently leave gaps which only a person trained in economics can fill in as he reads. In writing for a popular audience, however, the economist must spell out each major step of his reasoning.

In explaining these steps, show the reader what's important and

what isn't. You may have all the factors neatly arranged in your mind so that you can bring them to focus. The layman can't. Your responsibility to him doesn't end with listing the facts which bear on the problem. You must also show how they fit together and make common, ordinary sense.

To achieve the kind of organization which makes sense, you must have a plan or outline for your article before you write it. Some people can do it in their heads; most of us can't. A great many "popular" articles and books on economics sound as though the writer had simply set down thoughts as they occurred to him. As an economics editor, I've worked with economists a lot. I've also worked with professional writers. There's one outstanding difference in their work habits. The economist, his material at hand, starts writing at once, then labors over "making things fit." The professional writer outlines and plans, usually spending as much time in planning as he does in the actual writing. Once he's got the skeleton of his story in mind, or on paper, he can fill it out rapidly.

Outlining will help you get away from the jerky, jumbled sentences which make reading difficult. Many economists write as though they expected each sentence to stand alone. You may as well give up trying to put all the qualifications in one sentence. It can't be done. If you want to be understood, make each sentence tie onto its neighbors. Writing that carries the reader from sentence to sentence and paragraph to paragraph conveys ideas. Professional writers say that writing which does this has "flow." It stems from clear thinking in the first place and skillful outlining in the second.

If the reader has to turn back to an earlier page to find out what you said, your writing lacks flow. It means that you have not set down your ideas in the order the reader can best digest them. He passes over an idea, not catching its significance. Later, he sees where it fits in, so he must go back to pick it up.

II. Brevity

In discussing organization, I mentioned that popularization requires filling in gaps which can be left open when writing for other economists. To write for the layman, the economist usually has to *increase* the amount of space for any one idea. He must explain, connect, illustrate in order to lead the reader through the intricacies of his reasoning.

But brevity still is the soul of wit (and of clear writing). How can you be brief and still explain your subject thoroughly?

The layman has no interest in the details which you include in a technical paper. He's interested in the high spots only—the general drift. So achieve brevity by cutting out extraneous details. Concentrate on one central idea and drive it home. Then quit.

Long-windedness usually results from tacking on too many side issues which really interest only the writer and perhaps a few of his colleagues. How many of us actually read through the articles in the technical journals to which we subscribe? If it is true, as I suspect, that most economists would appreciate less wordiness in their own journals, how much more certain can we be that the layman wants us to cut it short!

The rule is: Get brevity without density.

III. Length of Sentence

This section deals with brevity of a different sort. I'm taking a firm stand against the Marathon sentence.

The simplest rule to follow in making writing readable (and everyone knows it) is: Keep sentences short. A recent study* showed that sentence length was one of the most important influences on readability.

Sentences should be short. Not necessarily all of them. Keep the average length down. But avoid a steady gait. A pace like this gets tiresome.

Excess sentence length goes back to that old failing of economists: putting in all the qualifications. By liberal use of prepositional phrases and commas, half a dozen different ideas can be strung between two periods. And that's just the trouble. The reader forgets what the sentence is all about by the time he wades through all the "however's," "except's" and "on the other hand's." That's especially true when he's not familiar with the subject matter.

Reading tests at Columbia University have shown that ability to absorb long sentences is related to abstract reasoning power. When you write for the public you can't assume much abstract reasoning capacity. Limit each sentence to one idea and length will take care of itself.

Average sentence length in the November 1945 Journal of Farm

* *Marks of Readable Style* by Rudolf Flesch, published by Teachers College, Columbia University.

Economics was about 23 words. This article averages 12. (A "sentence" is taken as a unit of thought and may be set off by a semi-colon, colon, dash, etc., as well as a period.) In writing for popular publication, it is *usually* wise to keep the average sentence length below 16.

IV. Words

Unfortunately for popular writers, economists have taken many every-day English words and given them restricted, technical meanings. Such words as capital, value, elasticity, resource, don't mean quite the same to the layman as they do to the economist. Consequently, translating economic jargon for the public involves explaining just what the technical words mean—or else leaving them out.

In most contexts, concrete terms can be used to replace technical, abstract words. For example, why use the word capital when you mean farm machinery? If you're talking about a particular kind of capital, there's nothing gained by using the more abstract term. If you're using "resource" in the economic sense of a factor of production, be specific: Say *labor* resource or *land* resource.

In general, the more concrete words you use and the fewer abstract the better you will be understood.

Another good rule: Never use a big word when a little one will do. Little words often grow to big ones by taking on suffixes and affixes. As words grow by this process their meanings become more variable and abstract. (Re)source is an example. The more closely you stick to raw Anglo-Saxon the more closely you will approach the language of every-day speech. And the better you will be understood.

Economics cannot be made simple and entertaining. All of us have read books and articles which were so deliberately POPULARIZED that a sixth grader could hardly take them seriously. Economics is a serious subject and should be so treated. But for the very reason that it is serious stuff and important, it should be clear. Economic relationships are complex. You can't change that by using short, concrete words. You *can* help the reader understand the complexities by your choice of words.

As a very minimum, you can avoid using words more complex than the ideas they represent. Some writing on economics seems designed to show off the author's erudition rather than to increase

the erudition of his readers. Most economists need to be more wary of this fault than of "writing down" and offending the intelligence of readers.

The distinction in motivation is important. When the writer sets out to get across ideas—to drive home his argument—he usually writes clearly. When he allows himself to be repressed by fears that his colleagues will think him shallow, he tangles up his presentation with high-sounding words. Sub-consciously he *wants* to be hard to understand.

V. Human Interest

This psychology of desiring to appear profound makes economists shy away from any attempt to be interesting. So afraid of being charged with frivolity are they that they actually try to be dull. At least it seems so.

It's true that economics writings are not read for entertainment. But that doesn't mean they have to be dull. You must at least be interesting enough to convince the reader that what you have to say is important to him, or he won't read you at all. It's no disgrace to lure readers. Why write at all if you don't want to be read?

Many studies have shown that reader interest and reader understanding go together. You can use short words, short sentences; you can organize your material in logical sequence; and you will still fail to be understood—unless you are able to interest the reader.

Now what are people interested in? People, of course. And what is economics about? People. Economics is a science of human behavior. Remember?

Rudolf Flesch found (in the study mentioned earlier) that personal references have a lot to do with readability. Proper names, personal pronouns and words indicating human beings put life in your copy. They make your stuff interesting and therefore understandable.

Instead of saying, "Wheat acreage increased 10 percent," why not say, "Farmers planted 10 percent more acres of wheat." It may seem a small difference to you in any one sentence or paragraph. Next time you read an entire article about *inanimate* things you'll see what I mean.

The same principle is involved in using active voice instead of passive. Every economic development occurs, not by itself, but by

people producing, buying, selling, saving or performing some other action. One reason Stuart Chase is so widely read is because he makes economics human—because he writes about people.

VI. Five Guides

We have talked about five guides to better writing for economists: (1) Organization for the reader's benefit, (2) brevity, or leaving out the details, (3) short sentences, (4) crisp, concrete words and (5) human interest.

Anyone can apply these guides and get measurable results in readability. You don't have to be a Stuart Chase.

Let's take a brief example, from a discussion of food subsidies, showing how it can be made more readable.

Before:

The effectiveness of food subsidies as a means for controlling inflation grows out of several factors in the current economic and political setting. Important among these are (1) the way in which upward changes in wage rates have been implicitly tied to upward changes in the cost of living,¹ (2) the establishment of 100 percent of parity as a minimum for setting price ceilings on agricultural products, and (3) the way in which changes in the prices of goods purchased by farmers are reflected in changes in parity prices. These factors limit the extent to which an increase in one price or wage rate can be made without leading to increases in other prices or wage rates—unless subsidies are applied. These and other factors also limit the extent to which prices can be lowered. Consequently, few price decreases can be made to compensate for price increases and thus enable maintenance of the general level of prices.

Another factor of importance is the large volume of liquid holdings (cash and demand deposits) now in the hands of individuals. These holdings are potentially a very important factor in the upward pressure upon prices. Unless individuals expect a reasonably stable level of prices, they may try to convert their cash and demand deposits into such goods as are available. A further increase in prices might result in widespread attempts to convert these liquid holdings into real goods and render the maintenance of effective price ceilings extremely difficult.

¹ This relationship between wages and the cost of living may not be directly implied in the Little Steel Formula, but one may read such a relationship into the Stabilization Act of October, 1942.

After:

Food subsidies help control inflation because they give farmers larger total returns without raising prices to consumers. You can't give farmers higher market prices without raising retail prices. But you can give them the *effect* of higher prices through subsidies—thus encouraging greater production—without boosting consumers' food costs.

If retail food prices were allowed to rise, city workers would want higher wages. We set a precedent (in the Little Steel Formula) for keeping wages in line with cost of living. So wages probably would rise. That would add fuel to the inflation fires.

Because all prices and wages are related, it's difficult to raise or lower one without affecting others. For example, farm price ceilings are based on parity. If prices of things farmers buy (including food) go up, then parity goes up.

Another reason for not "giving way" on food prices appears in the huge backlog of spending power. If people expect prices to stay fairly steady, they won't be in a hurry to spend their savings. But if prices start edging upward, they'll dive in to buy before prices go higher. That's inflation.

LAUREN K. SOTH

Iowa State College

REVIEWS

World Rubber and Its Regulation, K. E. Knorr. Stanford University: Stanford University Press, 1945. Pp. 265. \$3.00.

This is a worth-while book. It presents the facts of the world rubber situation fully and yet concisely. It draws convincing conclusions for current questions of United States rubber policy. Paradoxically, it pronounces only hesitantly and with apparent reluctance concerning the "social desirability of various forms of international rubber control," to examine which the author says the book was written.

The book tells the story of the phenomenal parallel growth of rubber utilization in tires and of rubber production on plantations starting about the beginning of this century. It documents the economic characteristics of plantation rubber: an over-response of production to a sustained price rise but one coming after a lag of 5 or 6 years, a slow and entirely inadequate production response to price decline, little consumption response to changes in price, limited storage capacity, and little incentive to the holding of stocks by private operators. It brings out the consequent tendency to over-production and to cut-throat competition.

The book then tells, in admirably concise completeness, of the development of export controls in the producing countries to meet this situation. It gives the history and results of the British Stevenson Plan of 1922 that failed after 6 years largely because the Dutch didn't cooperate. It has a full account of the International Rubber Regulation Agreement of 1934 that lasted until the Japanese took over and that maintained desirable average prices but permitted price "gyrations" and increased costs of production. It tells of the growth of the production of synthetic substitutes to major proportions during the war.

The book also discusses major problems of United States rubber policy. The author proposes maintenance of a sufficient synthetic rubber production capacity (not more than one-fourth wartime capacity) to take care of the requirements of military security. This should be accomplished through some direct and selective type of subsidy (if subsidization proves necessary) rather than through import restriction. There should be a permanent stock pile of natural rubber as a supplement thereto. No reliance should be placed on development of a high-cost plantation industry in the Western Hemisphere or on the maintenance of guayule production.

One must sympathize with the author in his struggle over the "social desirability" of international controls.

On the one hand, he is forced to conclude that, because of its basic economic characteristics, natural rubber will remain in chronic world surplus. That is, in the absence of some sort of control, exportable supplies will almost always exceed import requirements. The only question is whether synthetic rubber will compete successfully and make the market for natural rubber grotesquely inadequate or whether there will remain a market for a substantial part of plantation production capacity. In either case, there will be cut-throat price competition and producer distress. Hence, control is inevitable and probably necessary.

On the other hand, the author finds that past controls have operated to decrease productive efficiency and have failed to limit price fluctuations. They have been unnecessarily restrictive and have been against the interests of consumers. The author is very pessimistic about the possibility of better controls in the future. He bemoans the fact that businessmen and pressure groups and governments tend to base policies on a short-run, and presumably short-sighted, approach. Hence he feels, one should rely on the market mechanism which uses price to adjust production and consumption to the long-run situation.

But the price mechanism does not operate right for natural rubber. It leads to chronic surplus supply. And so the author is led back around his circle of reasoning. Throughout the book this dilemma appears as a confused and repetitious undertone beneath the clearly organized and well presented facts.

But the author works at it bravely and in his conclusions retains the elements of the unsolved problem. He would have a permanent rubber commission to obtain and present all relevant facts. He proposes that the lines of an international effort be agreed upon before the postwar transition period of rubber scarcity is over—even before its end is in sight. He wants this international effort directed to the adjustment of production capacity down to the level of requirements by eliminating the less efficient producers without saddling the cost of their elimination on the other producers. This would call for a shift away from the large estates to the small native-producers. The author makes rather specific and detailed suggestions as to steps that might be taken—steps that appear practical for the most part and quite worthwhile. But for the moment he seems to forget the basic tendency to overproduction.

Should the measures he prescribes fail to contract output sufficiently (*begging the question of how to keep it contracted*), the alternative is another regulation agreement. But a new agreement should be made to lead to greater, instead of less, efficiency and to more stable prices. The author thinks the first might be accomplished through the establishment among the large estates of 4 categories of efficiency, and through a formula for the export quotas that took this and other cost data into consideration. To achieve more stable prices, the author recommends a buffer stock, although pointing out that this will not work in the presence of either rubber surplus producing capacity or important fluctuations in industrial activity—which is to say that it will not work for rubber. Any regulatory body should include consuming country representation, although the author questions the advisability of including natural rubber consumers that are also large producers of synthetic rubber.

Whatever the solution, the author thinks it should raise living standards, i.e. lower costs, and “interference with this principle in the interest of other social objectives [such as national security] must be kept to a minimum.” If prices are stabilized, they must somehow still be allowed to guide production. Government must be responsible, when intervention is necessary, for advancing the social good in spite of the profit-seeking of business.

In all this the author seems troubled that he can not clearly point the way to a return to a free world market for rubber. Perhaps it would ease matters for him, and for sympathetic readers, to look upon rubber as a world public utility requiring supervision by a world public body in which the interested governments collaborate in the public interest. The task of such a body, like other utility regulatory bodies, includes the prevention of cut-throat competition and the limiting of profits through the setting of appropriate rates and of schedules of supply. The practical problem is enormous, but the problem of economic theory, or of “social desirability,” need not be such a poser as the author seems to make it.

It may be added that a great contribution to the conduct of a world regulatory body, especially in the present state of international democracy would be constant surveillance by independent critics having the combination of broad understanding and courageous public-mindedness displayed in Dr. Knorr’s book.

R. B. SCHWENGER

Office of Foreign Agricultural Relations

The Milk Industry, Roland W. Bartlett. New York: The Ronald Press Company, 1946. Pp. xii, 282. \$4.50.

This book is entitled "The Milk Industry—A Comprehensive Survey of Production, Distribution, and Economic Importance". In Part I, "Freedom of Enterprise and Full Employment," Dr. Bartlett's main thesis is developed and presented, and in Part II, "Efficiency and Per Capita Sales of Milk", the results are presented of research studies in this field.

As might be gathered from its heading, Part I covers a wide field. After summarizing the relative importance and position in the national economy of butter, cheese, ice cream, dried milk, etc., particular attention is given to factors affecting milk sales and milk distribution costs. Store distribution and the use of paper containers receive extended attention. This is one of the most interesting sections of the book, and taken together with the material presented in Part II, will probably be the part of greatest interest to students in the field of dairy marketing. Dr. Bartlett goes on to discuss: "Trade Associations and Labor Unions", "Balancing Competition and Necessary Regulation", "Reducing the Farm Cost of Producing Milk" and "Looking Ahead in the Milk Business". These chapters are largely concerned with the milk industry and present factual material bearing on the topics listed. The remaining three chapters of Part I are of a general nature and have little specifically to do with the milk industry. They are concerned much more with the author's views on the causes of economic depressions and of unemployment and the means of overcoming them.

In Part II, three research studies are incorporated into the book. These are "Analysis of Some Factors Affecting the Per Capita Sales of Milk" by A. G. Mathis; "Measuring the Efficiency of Market Milk Plants" by P. H. Tracy; and "Essential Requirements for Milk Ordinances" by M. J. Prucha. The first of these studies brings together material bearing on milk consumption in many of the important markets of the United States. Following analysis of these data, individual reports are given for each of 28 cities for which data were available for 5 years or more. The survey by P. H. Tracy studies operations of four milk plants in Washington, D. C., and deals primarily with technical plant efficiency. Washington was selected because of its relatively low margins for processing and distributing milk. One of the four plants studied confined its operations entirely to the wholesaling of milk in paper containers. The third study

(by M. J. Prucha) examines the historical development of regulatory laws affecting the dairy industry and presents opinions of a number of authorities on prevailing sanitary requirements for the production of dairy products.

This is a readable book. It is also a provocative book. This is especially true when the author is directing his attention towards specific problems in the distribution of dairy products. Dr. Bartlett has devoted much effort to this field, and he has interesting and stimulating things to say. Not everyone will agree with him all the time but they cannot help but find that the ideas he puts forth provoke thought. Some of the material presented on such matters as milk consumption and the influence of such factors as store differentials, prices, and consumer incomes on it are suggestive but not conclusive. More study is needed before we can speak with assurance about the factors affecting the demand for milk. Some readers will wish that Dr. Bartlett had devoted more of his book to pushing farther into some of these phases of the economics of the dairy industry itself and given less space to broad questions of national policy, important as they may be.

This book, perhaps because it is directed towards a number of objectives, may leave many readers unsatisfied. Actually, the book goes much beyond a "Comprehensive Survey of Production, Distribution, and Economic Importance" in some respects and falls far short in others. The title is somewhat misleading. Instead of a detailed compilation of facts about the industry together with a presentation of the economics of milk production and distribution and their place in the national economy, a good deal of attention is directed towards the author's ideas regarding the role of government and the functioning of the nation's economy.

In his preface Dr. Bartlett sums up his purpose in this way. "Unhampered expansion of markets and full employment are matters that affect the prosperity of every American industry and every American citizen. This book deals with those economic aspects of one of our major industries, the production and distribution of milk and its products. Its purposes are to point out possibilities in that industry, set forth facts about conditions in it, show monopolistic and other situations that hamper its expansion, and suggest remedies for the ills that beset it."

"In addition to its interest to those who are directly concerned, the book has also a broader purpose and a vaster audience. One of

the motives in its writing has been a definite fear that truth born in our American democracy 170 years ago, which we have defended at such cost in war, will die within the next decade or two unless we crush monopolies of whatever kind or by whom exercised, which tend to strait-jacket our economy, prevent expansion of markets, and so cause unemployment. Failure to maintain full employment and full productivity, largely under a system of free enterprise, means a gradual taking over of business by government, inevitably ending in a dictatorship by one of the major groups in our economy. Bureaucracy, whether corporate, institutional, or governmental, tends to level down those of superior abilities to the common level of mediocrity. All-out government control will mean the end of truth and a gradual lowering of the standard of living throughout the world."

In attempting to cover such a wide field, it is difficult, to say the least, to treat each segment comprehensively and still keep a book to readable length. Students of the industry will wish that their particular field had received more attention. And many of them will feel that from their standpoint they would have preferred to focus attention directly upon the industry, instead of treating it as a vehicle in which to convey the author's views about "Freedom of Enterprise and Full Employment."

ALAN MACLEOD

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Canadian Agricultural Policy, Vernon C. Fowke. Toronto: The University of Toronto Press, 1946. Pp. xii, 304. \$3.50 plus 15¢ postage.

"Canadian Agricultural Policy" by Vernon C. Fowke of the Department of Economics of the University of Saskatchewan is a pioneer work on a subject that warrants clarification.

The historical approach substantiates the thesis that agriculture in Canada has been subordinated to other various interests at various times. Agriculture has been expanded and developed at various times as a foundation for empire defense, ecclesiastical aspirations and commercial requirements as circumstances dictated.

The book is divided into two approximately equal sections, the first-part dealing with the Pre-Confederation Period and the second with Federal Agricultural Policy. Part one, discusses the historical role, The French Regime, The Maritimes before Confederation,

The St. Lawrence Region and The Agricultural Frontier and Confederation. Part two treats Federal Agricultural Policy, Encouragement of Immigration and Settlement, The Live Stock and Dairy Industries, The Production and Marketing of Wheat, The Canadian Tariff and The Farmer, and Conclusion.

This book is the result of much original research and quotations from sessional papers are frequent, yet at the same time the bibliography contains a lengthy list of books of prominent writers on agriculture including *Agricola* (John Young), one of the first of a long list of writers who specialized in advising the farmers how to farm. In addition several unpublished theses have been included and numerous articles by acknowledged authorities. An excellent feature of the book is an index of some sixteen pages.

The philosophy here presented may be unwelcome in some quarters. This is because the author maintains that a new philosophy is needed. Numerous common assumptions are examined and their validity questioned. This in itself will make this book to some extent controversial. This adds to its usefulness and makes it necessary reading.

The chapter on the Canadian farmer and the tariff points out that farmers have not exerted any great influence on fiscal policy even when they formed the major portion of the population and voting power. The farmers have been on both sides of the controversy between protection and free trade due to the fact that the Maritime provinces and Quebec were never able to provide food for themselves and the export surplus came only after Western Canada was made available. Now the new frontier lies not on the development and expansion of agriculture, but in newsprint and mineral wealth of the pre-cambrian shield.

One of the common assumptions here attacked and rather effectively disposed of is the assumption that agriculture is the basic industry of Canada. History indicates that the industry was never treated as basic. The industry was encouraged and assisted rather for what it might contribute to other interests either in the way of provisions, extending settlement or furnishing an export surplus. Canadian tariff history is offered as proof of this claim.

Another assumption that farmers are prone to so-called *bad practices* is challenged and it is pointed out that in the matter of what constitutes *good* or *bad* techniques in farming the farmers themselves have been more realistic than their advisers.

There is no criticism made by this reviewer for what has been said. There may be some slight reference to what has been omitted. It is pointed out that Confederation was influenced by an endeavor to save Western Canada from falling into the lap of the United States. This may be granted as one factor. Yet another factor was the need to hold British Columbia where there were already a number of people detached from what was then Canada. British Columbia is not mentioned in the book.

The settlement in Western Canada by companies is given in some detail. Yet the operations of the Canada Land Company and the British American Land Company were omitted. This is all the more noticeable as Sir A. T. Galt's political influence was included while his contribution to land settlement and type of immigrant required through his experience as Secretary of the British American Land Company was omitted. The Ottawa-Huron Tract is given as a sample of placing settlers where conditions were not favourable. Yet another Huron Tract settled by the Canada Land Company near Lake Huron, where more favourable results were secured, is not mentioned.

Perhaps it might be suggested that in Chapter VIII entitled "The Live Stock and Dairy Industries," some twenty-three pages are given to live stock and seven pages to the dairy industry including the summary. This might be construed as being a trifle out of balance. These slight omissions detract little if all from the value of the book. In any case the object was an estimate of agricultural policy.

Each chapter has a summary. The conclusions from the study are well brought out and this book might well be referred to as a "must" by all who claim to be students of agricultural policy.

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Inflation and the American Economy, Seymour E. Harris. New York: McGraw-Hill, 1945. Pp. xxiv, 559. \$5.00.

This book, a companion to "Price and Related Controls in the United States", is Dr. Harris' second during 1945. (He also acted as editor of a volume on "Economic Reconstruction" published in the same year.) The book has two main purposes: (1) to analyze thoroughly the factors making for and against wartime inflation in

the U.S. in the period 1939-44 (2) to prescribe monetary-fiscal policies which are likely to be needed in the postwar period, particularly the longer run. No one who reads this exhaustive treatment of wartime inflation will question that the first purpose has been accomplished. Some will disagree with the analysis and policy prescriptions which underly the second purpose.

Harris begins by adopting a definition of inflation which reflects the "inflationary gap" approach to the subject in the war years. Thus: "By inflation in the civilian economy we mean a rise in prices which results from an excess of demand for civilian goods over the supply of these goods made available to the civilian population at prices of the preceding period." (P. 7) The well-known "gap" approach stressed not only the advantages of increasing supplies as an inflation offset, but also emphasized that producing part of these supplies generated income for which no war-time civilian goods could be provided, so that the problem of controlling demand was also serious. Harris concludes that we did a pretty good job of inflation control in the war years, pointing out that even in 1945, the great wartime inflation predicted by many from 1940 on had not developed.

He analyzes the reasons. These he finds primarily in the large expansion of output which the U.S. achieved during the 1940-44 period and in the various controls which were used to reduce demand: taxation, price-control, rationing and encouragement to savings. Writing on the eve of Congressional action which seems determined to destroy the effectiveness of OPA (rationing already having been practically abandoned and taxes reduced), the reviewer recalls World War I, when the major inflation came in 1919-20, though the war ended in 1918. The pressure on prices in (spring) 1946, resulting in large part from accumulated spending power of the war period, is much more intense than after World War I. Moreover, there is general recognition that prices are closely tied up with such wage stabilization as we have been able to achieve. It is true that we know much more about the techniques which can be used to control inflation than in 1919. There is little evidence that we will make use of the knowledge that we have.

Harris is much concerned about the postwar years, for which his overall conclusion is that the dangers are more likely to be deflationary than inflationary, especially in the longer-run. He doubts

the ability of the private economy, over a period of years, to provide outlets in consumption and capital expenditures which will provide an "high employment" economy. He therefore goes "all out" for net government investment or consumption spending to offset such deficiencies in total spending out of incomes as may exist, or spending which may be necessary to lift total income to higher levels.

In his general fiscal policy, Harris follows Alvin Hansen (to whom the book is dedicated) very closely. Harris himself points out that, if he is right about the future, his program might involve a rising trend in public debt, but is not much disturbed. We find the oft-repeated Hansen ideas that "how much public debt the country can stand depends first and foremost upon our national income and the kind of tax system that we have", and that emphasis should be placed on the small rise in the marginal interest charge compared with the increase in income which will result from net public spending (increase in income by assumption). (Pp. 526-527)

Harris is right in arguing that government must be prepared to avoid a "deflationary gap", in order to prevent large-scale unemployment. Two comments are in order, however:

1. On the basis of our rather unsatisfactory experience with emergency government expenditures during the thirties, there is much to be said for shifting the fiscal *emphasis* in the future to planned flexibility in tax revenues rather than in public expenditures.
2. The Hansen-Harris willingness to accept a large (and rising) public debt is also tied up with a willingness to accept a large (and rising) tax load necessary to carry the interest on such a debt. But Ratchford has argued very convincingly that a heavy tax load inevitably interferes with the creation of income in a private enterprise system, no matter what the character of the tax system. (See his "Burden of a Domestic Debt" in the *American Economic Review* for September, 1942).

The answer to Ratchford (and to Harris and Hansen), as David McCord Wright and others have pointed out, probably lies in social willingness to accept the direct creation of purchasing power by a monetary authority which would coordinate all federal fiscal and monetary powers. Under such an arrangement, taxes to cover interest in every interest period would not necessarily have to be

raised, nor would the supply of usable funds necessarily depend on the increase of interest-bearing debt itself.

So radical a departure from the canons of "sound" finance would probably not be politically acceptable except under stress of a serious deflation. But there is no particular reason why money issue should not be feasible within a framework of rules for action by the authority. Such an agency might find it desirable, in the interest of general economic stability, to restrict the flow of income at certain times—by raising taxes to drain money out of private cash balances and by following restrictive credit policies—just as it would find it desirable, at other times, to cut taxes, issue money and retire debt. The point is that such an agency must exist in order to implement "full-employment" policy, and must operate flexibly as a counter-weight to major business swings in the private economy.

Harris guessed badly about the transition. He had plenty of professional company. The strong deflationary forces which he expected to develop as the federal government cut war spending were offset by so rapid an expansion in civilian buying that the annual rate of decline in gross national money product was checked at less than 10 percent in the first quarter of 1946 (from the second quarter of 1945). Harris had feared a reduction of 20 to 25 percent in the transition. Consumer expenditures were made at a record annual rate in the first quarter of 1946 and, together with business capital expenditures, were still being held in check by insufficient supply. Civilian employment of 53 million in March 1946 was not far below the war-time figure of 54.3 million in July 1945, and unemployment had not succeeded in pushing above 2.7 million, which is moderate by any standard of peacetime measurement.

These errors in transition estimating do not destroy the fact that the book is a painstaking analysis of wartime inflation in the U.S. which evaluates a very large number of inflationary and anti-inflationary factors. It is a kind of source-book for the U.S. economy in wartime which will be useful to most economists, whether or not they agree with the prescriptions for fiscal-monetary policy in the future. For economists who must "run as they read", Dr. Harris has given a statement of issues and problems in his introduction and in Chapters 1 and 2. His conclusions for the entire book are summarized on Pages 521-31.

EDWARD D. ALLEN

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Economic Demography of Eastern and Southern Europe, Wilbert E. Moore. New York: Columbia University Press, League of Nations Publication, 1945. Pp. 299. \$3.00.

The book offers both less and more than the title promises. It offers less, because the analysis promised by the title covers only about half of the book. Even the thus abridged discussion contains a considerable amount of material which will be found interesting. However, the territory selected for the analysis seems to the reviewer rather artificial. Most of the covered countries have in common that they are more or less undeveloped predominantly agricultural countries. But there is a fundamental difference between them in the type of agriculture practiced, a difference largely predetermined by the climate. The agricultural future of the Baltic States, which had ceased to exist as independent states by the time the study was published, Poland and the Danubian countries, lies in grains and animal products; for the Baltic States and Poland also potatoes. The agricultural future of Greece, Italy, Spain, and Portugal is in fruits, vine, and vegetables. These products they have in common with the other Mediterranean countries, French North Africa, Libya, and Turkey, and a comprehensive and fully illuminating analysis would have to cover them all and, preferably, only them. Except for the location of Czechoslovakia in the east of Europe, there hardly was any reason to include this not undeveloped and considerably industrialized country in the study.

The study offers more than it promises in that the other half of it is devoted to an attempt at determining the volume of agriculture production per person in agriculture; per male engaged in agriculture; per acre of total land; and per acre of land in agricultural use, the latter laudably expressed in "arable-equivalent" acres. Similar attempts were made before, for example, by Huntington and Colin Clark. But the U. S. prices which Huntington and Clark used as weights in their computations of the values of the total agricultural production thwarted the results. The U. S. price of potatoes is as high as that of wheat, and this unduly boosted the countries with large potato production, where the potato has a value less than one-fourth that of wheat. The averages of European prices used as weights in the reviewed study are greatly preferable, although adjustments made in them seem not to have gone far enough. Corn, for example, appears to be underestimated, tobacco and grapes overestimated.

An attempt furthermore was made in the study to improve on previous work of this kind by determining the production by small areas rather than only in whole countries. It has to be granted that average production in such countries as Italy is almost meaningless, with the great differences existing between southern Italy and the Po Valley. But the available statistics just do not permit such determination, except for Germany which possesses regional estimates of milk yields, production and transportation statistics of goods moving from one province to another, and perhaps some other country.

The figures on production by small administrative districts, such as the French departments, computed in the study without deduction of the cost of purchased feed, fertilizer and so on, are not usable in the opinion of the reviewer. Indeed since the needed deductions vary greatly not only from one part of the same country to another, but also between countries, and owing to other reasons such as inadequacy of statistics and imperfections in the price scale used, the unadjusted figures give a very rough picture even for whole countries. The best part of the findings is the production figures per person and per man in agriculture, and per acre for whole countries, adjusted for the costs stated above.

While the study is only a step, it is a step toward a solution of a problem of vast importance, and certainly it gives a large opportunity for thought.

N. JASNY

Office of Foreign Agricultural Relations

The Economic Mind in American Civilization, 1606-1865: A History of the American Contribution to Economic Thinking. Joseph Dorfman. New York: Viking Press, 1946. 2 vols. Pp. 987. Bibliographical notes and index. \$7.50.

This is the first part of Professor Dorfman's long-awaited survey of American economic thought. In his preface he promises that the manuscripts covering the post-Civil War period will soon be completed. However, the volumes now available are alone sufficient to establish this work as one of the major economic contributions of the generation. Noble in scope and exact in treatment, it clearly deserves the title "Classic" applied to it by Wesley C. Mitchell.

Agricultural economists will find much of special interest in these early volumes, dealing as they do with the complex problems of

land settlement and the development of commercial and subsistence agricultures. Opening with a discussion of the colonial settlements and the joint-stock companies which organized them, the volumes cover in chronological order the varied economic doctrines which flowered so profusely during these formative years, many of which are yet reflected in American opinion on current economic problems. Indeed, one of the refreshing aspects of the work is how well it opens our eyes to the age of the very questions we are accustomed to think of as current. Colonial imperialism, foreign exchange, the danger of inflation, the function of public debt, the remedies for unemployment, and the place for government intervention in business are all questions long debated in America, and are here presented against the rich background of our social and political development.

By the most minute research into long-forgotten and sometimes almost unknown sources and through skillful use of quotations and paraphrase, Professor Dorfman brings to us a multitude of voices representative of all levels of society and accordingly carrying the elaborate reflections of gentlemen and scholars on economic topics as well as the cruder statements of the business man and the practical farmer. At first, as one would expect, economics in America was largely a branch of theology, with preachers, of course, the most prominent spokesmen. But as the tale progresses the farmers, bankers, merchants, and journalists increasingly enter and finally dominate the picture.

Against the complex background of each successive period in our political and social development key figures from our long roster of "economists" are presented in full length portraits. Along with the more or less familiar figures as Roger Williams, Penn, Jefferson, and Hamilton, some forty or fifty more or less unknown characters emerge and for the first time assume their proper status as major figures in our economic history. Perhaps the most interesting of these miniature biographies is that concerning Samuel Gale (1747-1826), an almost totally unknown author whose, "On the Nature and Principles of Public Credit" comes very near to stating the theories used to support the compensatory fiscal policy of the 1930's. Gale's theory is carefully elaborated and there is no question that an original thinker has been discovered and restored to his proper place. Others of the discoveries are almost as fascinating.

While many of the economic ideas formulated in the long period

from 1606 to 1865 are original and complex, they are for the most part not the work of specialized thinkers or scientists, since economics had not reached that stage, but rather are the heated arguments of vested groups and competing classes. Almost no one thought of trying to take an academic position. Every writer had his specific causes and fought for them more or less without pretense. The sweat of the economic struggle is on every page, the ivory tower had not yet been erected.

While the economic story is skillfully told and the biographical sketches are pleasant reading, the *Economic Mind in American Civilization* is not a book one would care to read from cover to cover as conventional histories can be read and enjoyed. Professor Dorfman's work assumes much knowledge on the part of the reader. The prepared reader, with a background in the political and social history of America, will get the most from his work. It is only with this background that his researches can be fully appreciated. The scholar will likely approach this work through the index or the table of contents or the bibliography, for it is after all an essentially bibliographical work. Professor Dorfman has opened a thousand new subjects for research. He has brought out of the dark important figures of our economic history. It remains for others to work over this great body of material and refine it and bring it to full life through a constant stream of monographs and books. This is not to detract from Professor Dorfman's great work. He has discovered the pay-dirt and brought it to the surface. Surely this is all that we can reasonably ask of him.

The history of our early economic affairs and motives is not a pleasant story. Harsh words and harsh actions seem to have ruled. The struggle was grim. It is little wonder that the frontier with its hardships of isolation and physical elements seemed preferable to many. The frontier, like many other familiar concepts, takes on new meaning and must be freshly assessed in view of Dorfman's findings. We are reminded of de Tocqueville's reflections when he found French Canadians living in compact communities in a harmony so close that they would not think of fleeing to the wilds where Anglo-Saxons from the American seaboard so often sought solace and fortune. Now that the frontier is gone and rich and poor must live together, we see how little our history has prepared us for this necessity. Almost every reader of this work will seek to find some trend in economic thinking or some sign of progress in the

management of business affairs. Probably most will be disappointed. The issues often seem to be eternal, repeated in each successive generation sometimes without much improvement. Some signs of progress are visible however: Mercantilism gradually loses its strength, the condition and status of labor is increasingly considered a suitable subject for economic inquiry, and the search for specific and more accurate data is carried forward. In total effect, the work leaves the feeling that we have come a long way and made much progress since our founding fathers started the joint-stock company settlement schemes and imported indentured servants and slaves.

Readers of this work will be impatient for the volumes yet to come. The Rockefeller Foundation must feel fully justified in the liberal grants made toward this study.

ROBERT W. HARRISON

Bureau of Agricultural Economics

PUBLICATIONS RECEIVED

Bartlett, Roland W., *The Milk Industry*. New York: The Ronald Press Company, 1946. Pp. xii, 282. \$4.50.

Fowke, Vernon C., *Canadian Agricultural Policy*. Toronto: The University of Toronto Press, 1946. Pp. xii, 304. \$3.50 plus 15¢ postage.

Ghosh, D. and Basak, K. C., *Jute—Some Aspects of Supply and Demand*. Calcutta: Indian Central Jute Committee, 1945. Pp. 24. 9d.

Hansen, Alvin H., *Fiscal Policy for Full Employment*. New York University: Institute on Postwar Reconstruction, 1946. Pp. 23. \$.25.

Harris, Seymour E., *Inflation and the American Economy*. New York: McGraw-Hill Book Company, 1946. Pp. xxiv, 559. \$5.00.

McCormick, T. C. (Editor), *Problems of the Postwar World—A Symposium on Postwar Problems by Members of the Faculty of the Division of the Social Studies at the University of Wisconsin and others*. New York: McGraw-Hill Book Company, 1945. Pp. viii, 526. \$3.75.

Pierson, John H. G., *Full Employment in Practice*. New York University: Institute on Postwar Reconstruction, 1946. Pp. 26. \$.25.

Sivaswamy, K., *Famine, Rationing and Food Policy in Cochin*. Royapettah, Madras: Servindia Kerala Relief Centre, 1946. Pp. 77 and Appendix. Pp. 35. Rs. 3.

Stigler, George J., *Domestic Servants in the United States 1900-1940 (Occasional Paper 24)*. New York: National Bureau of Economic Research, 1946. Pp. 44. \$.50.

Swanson, Ernst W. and Schmidt, Emerson P., *Economic Stagnation or Progress*. New York: McGraw-Hill Book Company, 1946. Pp. xi, 212. \$2.50.

Taylor, Amos E., *Foreign Trade and Full Employment*. New York University: Institute on Postwar Reconstruction, 1946. Pp. 20. \$.25.

NEWS NOTES

President Frederick V. Waugh has appointed the following committee to keep the membership of the American Farm Economic Association informed concerning the developments relating to a federally financed research foundation: L. J. Norton, University of Illinois, Chairman; George H. Aull, Clemson Agricultural College; Asher Hobson, University of Wisconsin; O. B. Jesness, University of Minnesota; H. R. Wellman, University of California. The members will recall that a resolution concerning this matter was adopted at the last annual meeting.

At the middle of June Senate Bill S 1850 had been reported to the Senate by its Military Affairs Committee. The key provision of this bill so far as work in the Social Sciences is concerned is as follows:

"The functions of each division shall be prescribed by the Administrator after receiving the advice of the Board, except that until the Administrator and the Board have received general recommendations from the Division of Social Sciences regarding the support of research through that Division, support of social science research shall be limited to studies of the impact of scientific discovery on the general welfare and studies required in connection with other projects supported by the Foundation."

In the House H.R. 6448 is under consideration by a subcommittee of the House Committee on Interstate Commerce of which Representative J. P. Priest of Tennessee is chairman. This bill contains the following references to work in the Social Sciences.

(1) Among the powers and duties of the proposed foundation are: "To initiate and support basic scientific research and scientific development in the mathematical, physical, medical, biological, engineering, and *social sciences* through contracts, grants or other forms of assistance" and (2) "Until such time as the board may create a Division of Social Sciences under subsection (b) hereof, the initiation and support by the Foundation of the *social sciences* shall be limited to studies related to the programs of the divisions theretofore established and studies of the impact of scientific discovery on the general welfare."

Any members who have special interest in this matter are invited to present their views to any member of the Association Committee. We are informed that *Science* will from week to week report any further developments relating to either of these two bills.

The Department of Rural Economics of Ohio State University in co-operation with the National Association of Real Estate Boards offered a two-week short course for farm appraisers from July 29 to August 10, 1946.

For the first time in the history of the institution, the Department of Agricultural Economics and Rural Sociology at Clemson College will this fall offer work leading to a master's degree.

R. H. Allen who recently returned from overseas duty with the Navy and was formerly with the Department of Agriculture has joined the Food Division of UNRRA and is stationed in Washington.

Don S. Anderson recently resigned his position as Professor of Agricultural Economics at the University of Wisconsin and accepted an appointment as Assistant Director in the Dairy Branch of the Production and Marketing Administration in Washington.

Henry H. Bakken, Associate Professor of Agricultural Economics at Wisconsin, was appointed Economic Adviser on General MacArthur's staff in Tokyo. During 1944 and 1945 Professor Bakken served the government as Economic Consultant in Italy and in Norway.

Ernest Baughman, recently discharged from the Navy, has joined the staff of the Federal Reserve Bank of Chicago as Agricultural Economist.

William E. Black who received his doctorate at Cornell University and served as a Captain in the Army overseas was appointed Assistant Professor of Agricultural Economics (Marketing) at the University of Wisconsin. Professor Black will be primarily engaged in marketing extension work.

Karl Brandt resumed his duties in the Food Research Institute in May after the fulfillment of his War Department assignment as Economic Adviser on food and agriculture in the Food and Agriculture Branch, Economics Division, U. S. Office of Military Government for Germany.

William Bredo will join the staff of the Department of Agricultural Economics at the University of New Hampshire on August first.

O. B. Brown, an Assistant in Farm Management, University of Illinois for the past three years, has been appointed Extension Specialist in Farm Management in the Arkansas Agricultural Extension Service. His position as supervisor of the farm accounting office for the extension accounting project will be taken by A. G. Mueller who has been an Assistant in the department for the past year.

H. C. M. Case, Head of the Department of Agricultural Economics, University of Illinois, is on leave for 6 months beginning July 1 to be a member of an agricultural commission which is to visit China under the sponsorship of the Department of State. In his absence L. J. Norton will be Acting Head of the Department.

Ira C. Castle and Charles N. Lane have returned to the Economic and Credit Research Division, Farm Credit Administration following their release from the Armed Forces. Clarence T. Cuthbert also returned from the service and has been given leave of absence from the Economic and Credit Research Division to continue graduate work at Iowa State College.

T. K. Cowden, Economist with the American Farm Bureau Federation in Chicago, was in London during May and June attending the International Conference of Agricultural Organizations.

M. E. Cravens, recently discharged from the Armed Forces with the rank of Captain, has been appointed Assistant Professor of Agricultural

Economics at Michigan State College, effective July 1, 1946. Dr. Cravens was Assistant Professor of Agricultural Economics at Texas A. & M. College before entrance into the Armed Forces. At Michigan State, he will be engaged full-time in research activities.

Joseph S. Davis was one of twelve participants in a conference on "Economic Research and the Development of Economic Science and Public Policy," in New York City, June 6-7, 1946, on the occasion of the 25th Anniversary of the National Bureau of Economic Research. He has been named as one of the representatives of the American Statistical Association on the Board of Directors of the Social Science Research Council.

Ernest E. Durham, Lt. Col. in the Armed Forces, has accepted a position in Farm Management Extension as Farm Management Specialist at N. C. State College of Agriculture.

W. T. Ferrier, Associate Professor of Agricultural Economics at Clemson College, has returned to the United States after a tour of duty with the American University in England and France and a lecture tour of Germany and Austria.

Walter D. Fisher has recently taken a position with the Division of Agricultural Economics, University of California. From February 1943 to 1946 he was with the United States Army Air Forces. Dr. Fisher will be doing research in fruits and vegetables.

D. A. Fitzgerald who recently accompanied Herbert Hoover on his survey of international food problems has been appointed head of the International Emergency Food Council established to succeed the Combined Food Board. Dr. Fitzgerald will be on leave from the Department of Agriculture to accept this assignment.

Charles N. Gibbons has transferred from the Division of Statistical and Historical Research of the Bureau of Agricultural Economics to the statistical staff of FAO.

Erwin Thomas Hadorn, formerly of the University of Basle, Switzerland, has been named an Instructor in Agricultural Economics at the University of Missouri. Mr. Hadorn completed his doctoral work at Basle before coming to the United States. He has been working on a research problem of the relationship of weather to major crop yields.

Arthur H. Haist, Extension Specialist in Farm Management at Michigan State College since June 1942, resigned as of July 1946 to accept a position with the H. H. Halderman Farm Management Service of Wabash, Indiana.

H. W. Hannah, Department of Agricultural Economics, University of Illinois, is Director of the Division of Special Services for War Veterans of the University.

J. R. Harris, First Assistant in Farm Management, University of Illinois, who has assisted in the cost accounting work for several years has resigned to become associated with the student housing division of the University. His place is being taken by A. C. Ruwe.

Leonard J. Haverkamp has resigned his position with Purdue University to join the commercial research staff of Wilson and Company in Chicago.

Howard J. Houk joined the staff of the commercial research department of Armour and Company in Chicago upon his release from the Army in March. Before induction into the Army, Dr. Houk was with the commercial research division of Ralston-Purina Company in St. Louis.

E. C. Johnson has resigned as Head of the Farm Finance section of the Financial Research Program of the National Bureau of Economic Research. Dr. Johnson has returned to the Farm Credit Administration where he is assisting the Governor.

P. E. Johnston of the University of Illinois resumed full-time duty with the Department of Agricultural Economics beginning January 1 after being on leave as State Director of the Illinois Emergency Labor Program. He is giving active attention to the undergraduate and graduate teaching in farm management and research in that field.

G. L. Jordan of the Department of Agricultural Economics, University of Illinois, has returned to full-time work in the Department after two years in charge of the editor's office of the Agricultural Extension Service. He is teaching marketing courses and doing research work in the field of prices.

Morris M. Kelso formerly Head of the Division of Land Economics, U. S. Bureau of Agricultural Economics, has accepted a position as Professor of Agricultural Economics at Montana State College. Dr. Kelso who has devoted the last four years to ranching operations in eastern Montana will divide his time between research work and teaching in Agricultural Economics with emphasis upon ranch economics.

Joe D. Kinard, Assistant Agricultural Economist at the South Carolina Agricultural Experiment Station has resigned after returning from several years with the Army to engage in private business.

Frank P. King, who has been on leave from the University of Georgia to do graduate work in Agricultural Economics at Cornell University, will return in September.

E. Fred Koller, Professor of Agricultural Economics at the University of Minnesota, has been granted sabbatical leave for a year of study in the field of Cooperative Credit in connection with the Financial Research Program of the National Bureau of Economic Research.

Henry E. Larzelere, who was recently discharged from the Navy with the rank of Lieutenant, Senior Grade, has returned to his position of Assistant Professor of Agricultural Economics, Michigan State College.

Edmond J. Lebrun, Instructor in Agricultural Economics at Rhode Island State College, resigned February 15, 1946.

Li Hwen-Chien and Wu Liang Hsin, graduate students at the University of Wisconsin, spent the month of May in South Carolina under the supervision of G. H. Aull, Head of the Department of Agricultural Economics and Rural Sociology at Clemson. Mr. Li is Professor of Agricultural Economics at Nanking University and Mr. Wu is district supervisor of the Farmers Bank of China at Nanking. Their special interest while visiting in South Carolina was in the field of farm credit.

O. G. Lloyd relinquished his duties as Head of the Department of Agricultural Economics at Purdue University, June 30, 1946, in order that he could devote his full time to research and writing in the field of farm tenure and farm labor agreements. The duties of Department Head were then assumed by Dr. Earl L. Butz, a member of the Purdue faculty. Professor Lloyd was the organizer and first Head of the Department of Agricultural Economics at Purdue University. During his 25 years of chairmanship, the Department grew into one of the major divisions in the School of Agriculture at Purdue University.

Orlo H. Maughan resigned from his position as Director of Research, Farm Credit Administration of Spokane, effective June 1, to accept an appointment as Head of the Department of Agricultural Economics, Washington State College. Alexander Joss formerly with the Berkeley regional office of the Bureau of Agricultural Economics has been appointed to fill the vacancy created by Dr. Maughan's resignation effective July 1.

Wade R. McMillen has been appointed as Instructor in Agricultural Economics at the University of Missouri beginning July 1. Mr. McMillen was formerly with Doane Agricultural Service in management of properties, and was recently discharged from military service.

Herman I. Miller has transferred from the Extension Service to the Poultry Branch, Production and Marketing Administration. Mr. Miller will take charge of economic analysis for the Branch.

George N. Motts, Captain, Quartermaster Corps, Statistical Analyst in the Office of the Quartermaster General at Washington, D. C., has returned to his position as Assistant Professor of Agricultural Economics, Michigan State College.

W. G. O'Leary who was mustered out of the United States Navy as Lieutenant Senior Grade in March is leaving the Agricultural Economics Department of the Mississippi Agricultural Experiment Station to enter private business on July 1.

Albert L. Owens, Assistant Agricultural Economist at Rhode Island State College returned to work May 15, 1946, following service in the United States Army since June 1943.

O. A. Parsons was recently honorably discharged from the Army Air Transport Command. Captain Parsons is returning to his position as Associate Professor of Agricultural Economics at Montana State College effective July 1.

Raymond Penn, formerly with the Lincoln, Nebraska, Regional Office of the Bureau of Agricultural Economics, has been appointed Assistant Professor of Agricultural Economics (Land Economics) at the University of Wisconsin.

Steve F. Phillips and Loyd C. Martin have been appointed Assistant Agricultural Economists at the South Carolina Agricultural Experiment Station and will devote their time to studies of small scale rural enterprises.

Roy E. Proctor, Farm Management Extension Specialist, University of Kentucky, has been appointed Professor of Agricultural Economics at the University of Georgia and will take up his new duties on June 15th.

Paul E. Quintus is with the Military Government for Germany stationed in Berlin. Dr. Quintus is working on dairy management problems while on leave from the Dairy Branch of the Production and Marketing Administration.

John L. Reitzel, Major in the Armed Forces, has accepted a position in Farm Management Extension as Farm Management Specialist at N. C. State College of Agriculture.

Charles E. Robertson has been appointed to the staff of the Department of Agricultural Economics and Rural Sociology, University of Arizona, as Assistant Agricultural Economist. He will conduct research work on farm management practices on farms specializing in alfalfa hay production. Mr. Robertson is a graduate of Purdue University.

J. Van Rogers, a veteran of World War II, who has been temporarily employed as Instructor in Agricultural Economics at the University of Georgia, has accepted the position of County Agricultural Agent at Fayette County, Georgia, effective June 15, 1946.

R. C. Ross, Department of Agricultural Economics, University of Illinois, has resumed full-time work with the department. Previously he had given much of his time to being agricultural adviser to the State Selective Service Board. He is in charge of the Freshman course in Agricultural Economics.

W. D. Schutz of the Soil Conservation Service stationed at Afton, Wyoming, has been appointed Research Fellow in Agricultural Economics at Montana State College to work toward his master's degree.

C. Gordon Smith, Jr., has returned to the Farm Credit Administration following his release from the Army. He is now working in the Cooperative Research and Service Division.

Melvin G. Smith has accepted a position as Economist for the May Seed Company at Shenandoah, Iowa. For the past three years, Dr. Smith has been Assistant Agricultural Attaché at Mexico City, Mexico. Prior to that he was a member of the Department of Agricultural Economics at Purdue University.

T. G. Stitts resigned as Director of the Dairy Branch, Production and Marketing Administration effective May 6 to become affiliated with H. P. Hood and Sons, Boston, Massachusetts. Sam W. Tater, formerly Federal Milk Market Administrator of Boston, Massachusetts, has accepted the position of Director of the Dairy Branch.

Cecil D. Thomas, Farm Management Specialist, North Carolina State College of Agriculture, has accepted a position as Senior Representative, Bank Relations Department, Federal Reserve Bank of Richmond.

W. N. Thompson, First Assistant in Farm Management, Department of Agricultural Economics, University of Illinois, has returned from war service and is now assisting Professor P. E. Johnston in his teaching work in farm management.

George E. Toben, formerly Instructor in Farm Management at the University of Minnesota, has accepted a position as Associate Professor of Farm Management at College of Agriculture, West Virginia University, effective July 1.

O. V. Wells has been appointed Chief of the Bureau of Agricultural Economics to succeed H. R. Tolley. Mr. Tolley resigned recently to become Chief Economist and Director of the Division of Economics and Marketing of the Food and Agriculture Organization of the United Nations.

George W. Westcott has concluded his sabbatical leave and returned to Massachusetts State College as Extension Agricultural Economist after having spent the academic year of 1945-46 doing graduate work at Harvard University.

E. J. Working, Department of Agricultural Economics, University of Illinois, is taking leave beginning July 15 to work at the University of Chicago on a study of factors affecting the demand for meat.

Mordecai Ezekiel is now on mission in Greece for the Food and Agriculture Organization. He is one of a group of 12 specialists who are surveying the entire agricultural system of that country with the expectation of making recommendations on adjusting Greek agriculture to a world agricultural system. They expect to return August 1.

Henry Jarrett, has joined FAO as assistant to Gove Hambidge, information head of FAO.

Charles F. Sarle recently returned to the U. S. Department of Agriculture from the Weather Bureau. He is to be in charge of BAE's work on general farm statistics.

Ralph Stauber, formerly with the War Relocation Administration, has rejoined the staff of BAE and will be in charge of Agricultural Price Statistics.

Emerson M. Brooks of BAE is in Germany on assignment with the War Department gathering data on food production in connection with the relief program. He expects to return about July 1.

Raymond Jessen of BAE, assigned to work at the Statistical Laboratory at Ames, Iowa, left for Greece in June to assist in the observation of the plebescite. He will be away five weeks.

F. K. Reed of the Colorado State BAE office is now attached to General MacArthur's Civilian Staff on a year's assignment in Japan assembling statistics on food conditions.

O. C. Stine, formerly head of the Division of Statistical and Historical Research in BAE, has been appointed Assistant Chief in charge of the Bureau's research on prices, income, and marketing.

Carl A. Taeusch, formerly head of BAE's Division of Program Study and Discussion, is now Assistant Chief of the Food and Agriculture Branch of the Quadripartite Council, composed of representatives of the U.S.A., U.S.S.R., Great Britain, and France, with headquarters in Berlin, Germany.

OBITUARIES

LEONARD A. SALTER, JR.

In the death of Leonard A. Salter, Jr., the profession of agricultural economics lost one of its most promising members. His alert and incisive mind quickened the thoughts of all of us. His deep professional interest in his work, together with a profound understanding of the basic issues, inspired his students and encouraged his older colleagues. He strengthened the future of his chosen craft. At an early age Leonard grasped the twin torches of liberty and learning. Although he was only 34, he stood pre-eminent in his field of specialization.

The tragic burning of the LaSalle Hotel in Chicago on the night of June 4, 1946, not only took Leonard's life, but also that of his wife and only child—known to hundreds of Leonard's friends and co-workers as Gertrude and Little Len. In a few awful moments, a holiday visit, to be shared the following day with mother and father Salter, was turned to bitter tragedy.

Professor Salter grew up in Springfield, Massachusetts, and graduated from Massachusetts State College in 1932. He early caught the discerning eye of the late I. G. Davis of Connecticut State College, who persuaded young Salter to come to Storrs. For several years Leonard worked in Connecticut, alternately drawn from the College into the administration of some public program of research, rehabilitation, or land use adjustment. So outstanding were his talents for administrative leadership that he faced a continuous struggle to find quiet hours for study and creative writing. But whatever he did, he lived zestfully.

The invitation in 1940 to work with the late Professor George S. Wehrwein in land economics at the University of Wisconsin gave him the double opportunity of sharing the labors of a man he admired greatly and the prospect of doing teaching and creative professional work. He was as solicitous of Professor Wehrwein in his last years as a devoted son. With the death of Professor Wehrwein in January 1945, Professor Salter assumed the heavy duties of graduate teacher and associate editor of the *Journal of Land and Public Utility Economics*. He was indeed a worthy successor to a great man. In addition, during the past year or two, Professor Salter served brilliantly as Secretary to the Postwar Planning Committee of the Land-Grant Colleges. He received his Ph.D. degree posthumously from the University of Minnesota on June 14.

Few men could write as well as Professor Salter. An idea would strike his fertile mind and stir him into fervent effort until written out. His writings on research methodology are major contributions to the field of economics. In his last few months, Leonard had worked out many of his ideas, especially in his dissertation. He had recently taken stock and doubled his resolve to write a monograph on research in the social sciences and then turn to his great ambition, a treatise on "Land and Civilization." His going leaves a gap that cannot be filled, but his ideas and ideals will inspire all who knew him to redouble their efforts to make life more enlightened and more satisfying.

K. H. P.
R. J. P.

ELLIS A. STOKDYK

Ellis A. Stokdyk, President of the Berkeley Bank for Cooperatives from its inception in 1933 until his death on January 22, 1946, was born on a farm in Sheboygan County, Wisconsin, on April 11, 1897.

After serving with the U. S. Navy during the First World War, Dr. Stokdyk completed his undergraduate work at the University of Wisconsin in 1920. He then served as assistant state club leader, University of Wisconsin, 1920-21, and as extension plant pathologist, Kansas State College, 1921-1924, where, in the latter year, he was granted the Master's degree.

In 1924 Dr. Stokdyk's activities shifted to agricultural economics, and from this date until 1928 he was extension agricultural economist at Kansas State College. He then returned to the University of Wisconsin and in 1929, was awarded the Ph.D. degree.

In recognition of his excellent record in working with agricultural cooperatives as associate professor of Agricultural Economics at the University of California from 1929 to 1933, Dr. Stokdyk was offered the presidency of the Berkeley Bank for Cooperatives when it was established as a unit of the Farm Credit Administration in 1933. This position offered an excellent outlet for his marked abilities as an agricultural economist and financial analyst, combined with his deep understanding of cooperative operations and philosophy; and within a short while, through his incisive speeches, articles and other publications, he had become nationally known as a cooperative theorist and financier. In 1938-39, in view of his unusual qualities in administration and research, he was granted a year's leave of absence to serve as Deputy Governor of the Farm Credit Administration, Washington, D. C., for the purpose of reorganizing its cooperative work.

Dr. Stokdyk was the co-author of two books: *The Farm Board* (with West), 1930, and *The Law of Cooperative Marketing* (with Evans), 1937; numerous agricultural bulletins issued either by Kansas State College or the University of California, and many articles in professional and agricultural publications.

These were some of the bare facts of Dr. Stokdyk's life. They do not reflect the warm and sympathetic personality of the man or his keen sense of humor. Few people had his gift for friendship and his perceptive knowledge of human nature. His untimely passing, through a heart attack, just when his type of abilities are most needed, was a heavy blow to those who knew him well. Dr. Stokdyk had the happy faculty of being both a penetrating student and a practical man. He could speak with equal fluency the language of the scholar and scientist and that of farmers and business men. He was thus a bridge over which could pass intellectual currents—both ways.

One final word remains to be said: Dr. Stokdyk was a cooperator. He believed in the cooperative system of economic organization as a form of free economic enterprise which was sound and in the best interests of the maintenance of our democratic form of living. It is in the field of agricultural cooperation that his reputation will grow as others catch up with his vision.

Dr. Stokdyk is survived by his wife, two daughters, and a son.

J. G. K.